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Rail Road News.

Dimpfel's Coal-burning Locomotive.

F. P. Dimpfel, the inventor of the locomotive which operated so favorably on the Reading Railroad as to save one half of the fuel, called upon us last Thursday to correct the statement copied by us, in No. 44, from the Pottsville Register. He states that it was no fault of his in taking the locomotive off the road, but unreasonableness on the part of the managers. They wanted a six months' trial of the engine, and he certainly was not unwise enough to accede to any such a bargain, when he warranted his engine to do every thing he recommended it to do. This engine has been introduced upon the Hudson Railroad, and the use of anthracite coal as a cheap substitute for wood will soon be found, not only possible, but in general use.

Chicago and Galena Railroad.

The business of this railroad has increased so fast that the company have been obliged to put on a regular freight train, which for a road only 40 miles in length, and in a new country, is something unusual, and is a very encouraging indication of the future business of the road when finished to the Mississippi.—We learn that the attention of Eastern capitalists has already been attracted towards this road, and their agent, who has been much engaged in the construction of railroads East, is now in Chicago, endeavoring to negotiate with the directors for the completion of the road to Galena within two years, laying the track with T rail at fair prices and to take in payment one-half bonds, one sixth the stock of the company, and one-third in cash as the work progresses and yields a revenue. The directors have his proposition under consideration, and will act upon it as soon as the various interests of the road can be consulted.

An Army of Laborers Wanted.

The Chief Engineer of the Baltimore and Ohio Railroad has advertised for two thousand laborers. The country in which the labor is required is very healthy. This number of workmen are to be employed for several months.

New Rope for an Inclined Plane.

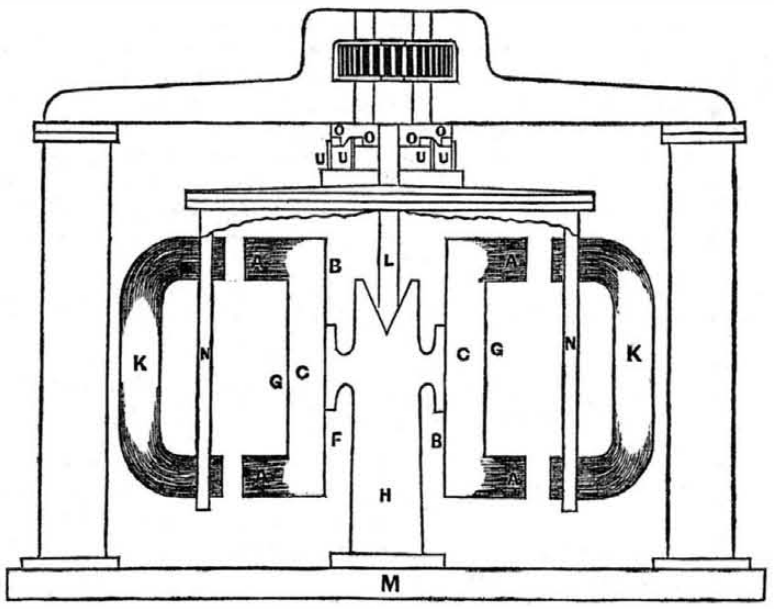
A rope for the inclined plane on the Columbia Railroad, near Philadelphia, was made last week, which weighed 23,000 pounds. It is nine inches thick and 6,000 feet long.

More Steamships..

The Savannah Republican states that the proprieters of the steamboat line between that city and Charleston have made arrangements to build two elegant sea-going steamers, to be placed, next spring, on an outside fast line.—These steamers will perform the trip in eight hours or less time.

By the latest news from Europe the Danes and the Dutch (not the Hollanders) were shooting one another.

HUBBELL'S SOLAR MAGNETIC ENGINE.---Fig. 1.

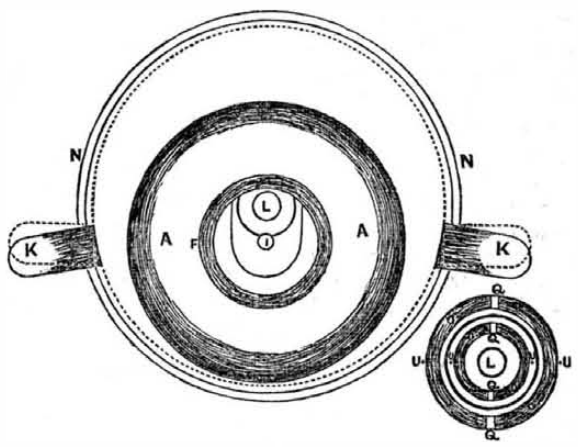


The accompanying engravings and specification is a description of "The Solar Magnetic Engine," invented by William W. Hubbell, Esq., Attorney and Counsellor at Law, Philadelphia, the inventor of improvements on fire arms, illustrated and described in our last volume, page 108. The leading feature of this invention is the solar magnet, one of which (figs. 1 and 2,) was used experimentally by him in 1841, and *Caveat* papers were then made out respecting its powers. As this is a subject which has frequently been broached by many, and was the subject of some lectures by Dr. Boynton, in this city, two years ago, it cannot fail to interest a great number of our readers and men of science, and as this is the first time the subject has been brought satisfactorily before the public, the length of the specification in our columns, and necessity of such a full description, will be appreciated by all those who read it; and the style of the author, Mr. Hubbell, is so clear and attractive, that every one will be repaid for the labor of reading and studying it. The first, third, and fourth pages will be taken up with the description. To read it well, cut the first leaf at the top, and reference to the drawings, for examination, will easily be made.

"SPECIFICATION.—Magnetism I believe to be a fluid which pervades all material things, though in different degrees, and that it will pervade soft iron and steel to the greatest degree. It has two qualities within its nature —a positive and a negative; which in different bodies attract each other, while each seeks to diverge from its kind in different bodies by repulsion. Positive magnetism, or that of the North Pole, results from the zinc portion of a galvanic battery; and negative magnetism, or that of the South Pole, results from the copper or iron portion of a galvanic battery. The production of magnetism by a galvanic battery, called electro-magnetism, is common, and the method well known at the present day.

The principle or character of my invention is based upon principles which I have deemed as a guide in developing my invention, to exist in the solar system of the universe; and

Figure 2.



being intended by me, so far as may be necessary to obtain an organized mechanical power and motion, as an imitation of the solar system, I have thought proper for elucidative purposes, to designate my invention the "Solar Magnetic Engine." Its nature is based in imitation as follows: I suppose the sun or centre of the system to be possessed of the magnetic principles of attraction and repulsion, and exercising these influences at every point of an unbroken circumference around a common centre or axis; its face possessing equal capacity of power at any circumferential, with any other parallel circumferential point, to attract direct to, and repel directly from this common axis or centre.

I therefore construct a centre or solar magnet to embody within its own nature these aforesaid principles. This magnet, with the variable modes that have occurred to me of constructing it, are hereinafter described.

To imitate the planets revolving about and governed by the sun and each other, as far as for my purpose of attaining available power in machinery is necessary, I have one, two, three, eighteen or fifty, more or less than two, magnets vested with attractive and repulsive power, and playing about and governed by a common centre not coincident with the centre of the solar magnet, but so fixed near it that these planetary magnets, by mutual attraction between each of them and the solar magnet, approach from their aphelion or farthest point of recedure, to their perihelion or nearest point of approach to the solar magnetic surface, and then by changing their poles relatively to this surface, when, or as they successively reach the nearest point of approach, they of the planetary and the solar magnet repel each other, until the receding planetary magnets respectively arrive again at their aphelion or point of farthest recedure, where their poles again rechange, and they of the planetary and the solar magnet attract each other, and thus the planetary magnets successively change at their points of aphelion and perihelion, and approach near to, and recede from, and revolve around the solar magnet; which solar magnet, at its every circumferential point, exerts its power on the revolving planetary magnets; and as within itself, owing to its formation, it concentrates and embodies, to and from its common centre, a great and uniform capacity of attractive and repulsive nature, so also when combined with the planetary magnets, it developes an uniform and continuous power for practical use, as an universally appropriative power.

With regard to the solar magnet, reference being had to figures 1 and 2, it is constructed as follows: figures 1, 3, 4 and 9 are each a sectional view of different solar magnets, on a line extending longitudinally through the centre or diameter of the engine; figures 1 and 9 also showing some of the planetary magnets. It (the solar magnet) may be said to be a continuously circular horse-shoe magnet, or to consist of two circular plates, A A A A, joined in the centre or at the inner circle, B B, by a circular back, column, or cylinder, C C, either solid or hollow; or the two circular plates may be joined at the outer or largest circumferential surface (as in fig. 3) by a circular ring, cylinder, or back; or as in fig. 4, the magnet may have both an inner and an outer circumferential surface, D D D D D D D D, formed by connecting the two circular plates, A A A A, about midway between these surfaces, by a circular ring, cylinder, or back, C C: this magnet will then be a combination of the one in fig. 1 and 2, and the one in fig. 3; or another mode to combine them is to have them separate as first described, yet the one fig. 3 so small, and the one figs. 1 and 2 so large, that the former will set within the circuit of the back of the latter, and thus they, back to back, with or without a wood cylinder, or other non-conducting substance between them, will be effectively combined; or the latter may set within the former, face to face, as in figures 5 and 6, and the planetary magnets approach and recede as indicated by their respective paths, E E and E E; or they may further be combined as is expressed in figures 4 and 3. The solar magnet may consist of solid wrought or cast iron, or steel, or may be made of numerous thin plates of iron or steel (or other suitable metal) riveted, screwed, bolted or otherwise secured together, or it may be made of soft wrought iron or steel strips, or wire, having the ends thereof to terminate and form the circumferential or magnetic surfaces of the magnet. The number of pieces of wire in this case must be very great, and each one bent to suit and construct the horse-shoe form of the solar magnet. I deem it best made of plates; and when the solar magnet is made of numerous pieces of thin plate or wire, each piece may be cut or spread of the shape displayed by figure 7, the dotted lines, X X, indicating where it is bent to form the poles; of

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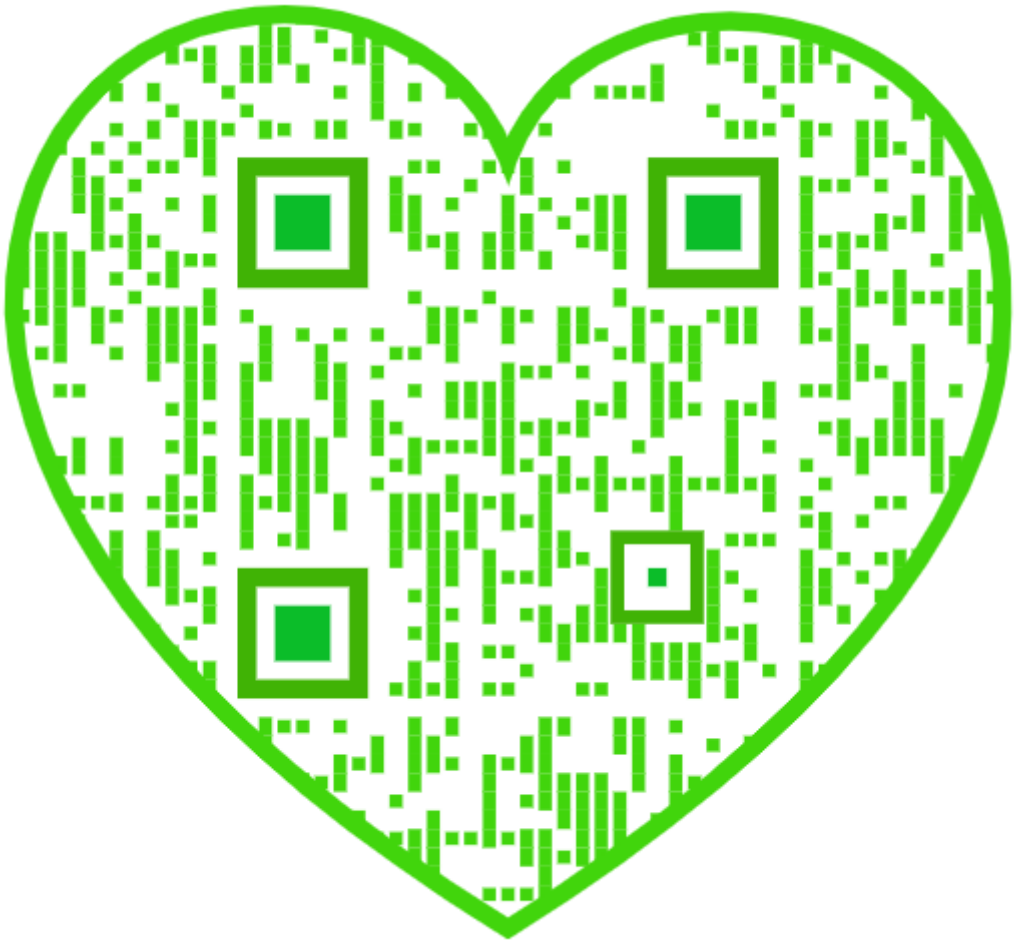

Miscellaneous.

Iron Business of Pennsylvania.

The following statistics, published in the Philadelphia North American, gathered under the auspices of the Iron Makers Convention, which annually assembles in that city, may be relied upon as authentic. It appears that out of 62 counties which the State embraced at the date of the last report, 45 contain iron works, and of 9 the remaining 17 contain abundance of iron and coal—though, owing to the absence of any cheap road to market, they yet remain untouched—leaving only 8 counties in the State not adapted to the manufacture of iron.

There are 304 blast furnaces and bloomeries in the State, with an invested capital of $12,921,576; their present capacity is for the making of 550,959 tons per annum; in 1847 they made 389,350 tons; in 1849, 253,370 tons; in 1850 their probable make is estimated at 198,813 tons. Of the above furnaces 57 use anthracite coal; have a capital of $3,221,000, and a present capacity for making 221,400 tons; in 1847 they made 151,331 tons; in 1849, 109,168 tons, and the estimated product of 1850 is 81,351 tons. The furnaces using bituminous coal are 7 in number, with a capital of $223,000, and a present capacity for making 12,600 tons. In 1847 they made 7,800 tons; in 1849, 4,900 tons; in 1850 the make will probably be 3,900 tons. 4 furnaces use coke, have a capital of $800,000, and a present capacity for making 12,600 tons per annum; in 1847 they made 10,000tons. 85 are charcoal hot blast furnaces, with an investment of capital of $6,478,500, and a capacity for making 130,705 tons per annum. The make of 1847 was 94,519; 1849, 58,302; in 1850 it will be 42,555. The charcoal cold blast furnaces number 145, with a capital of $5,170,376, and a capacity for making 173,654 tons per annum. The make of 1847 was 125,155; 1849, 80,655; in 1850 it will be 70,727. There are 6 bloomeries, with a capital of $28,700, and a capacity for producing 600 tons per annum. The product for 1847 was 545; 1848, 335; probable product of 1850, 280. The estimate for 1850 is obtained by deducting from the product of 1849 the amount made by such furnaces as are now idle. Of the 298 furnaces in the State, 149, or exactly one-half, are in blast this year, and of these about one-third are making no preparations to blow during the next year. The estimate for 1850 shows a decrease of 190,537 since 1847, or 49 per cent. in three years.—Should there be no change in the aspect of affairs, the make of 1851 will not exceed 100,000 tons.

The number of forges and rolling mills in the State is 200, with a capital of $7,580,500, with 402 forge fires, and 436 puddling furnaces, and a capacity to make 224,650 tons per annum. Their actual make for 1847 was 202,727 tons, and for 1849, 136,853 tons. Of the above, there are 121 charcoal forges, with an investment of capital amounting to $2,026-300. These forges have 402 fires, with a capacity of 125 tons per fire per annum, or a total of 50,250 tons. In 1847 they made 39,997 tons, and in 1849, 28,495 tons. The rolling mills number 79, with a capital of $5,554,200. They contain 436 puddling furnaces, which, at 400 tons per furnace, gives a total capacity of 174,400 tons per annum. Their make in 1847 was 163,760 tons; and in 1849, 108,358 tons.

There are 606 nail machines in the State, the annual product of which is 606,000 kegs, or 30,300 tons; being an average of 1,000 kegs, of 100 lbs. each, to a single machine. There are thirteen works engaged in the conversion of iron into steel, making annually 6,078 tons. Five of these works are in Philadelphia, six in Pittsburg, one in Lancaster, and one in York. The whole number of iron works in the State is 504, with a capital of $20,502,076 invested in lands and machinery, employing immediately 30,103 men, and 13,562 horses, besides 11,513 laborers not in the pay of the iron masters, but directly dependent on the iron works for support; making a total of 41,616 men. Allowing five persons to each laborer, and we have as the population dependent on the iron work, 208,080, or about one-tenth of the population of the State.

In 1847 the consumption of fuel in all the iron works of the State was 483,000 tons of anthracite coal, at an average value of $3 per ton, making $1,448,000; 9,007,000 bushels of bituminous coal, at 5 cents per bushel, making $450,380; and 1,490,252 cords of wood, at $2 per cord, $2,980,504. Thus giving the total cost of fuel $4,879,884.

Culture of Arrow Root in Florida.

A correspondent of the St. Augustine "Ancient City," speaking of this plant, says that he who knows how to make a crop of corn cannot fail in an effort to make a crop of arrow root.

The planting may be begun at any time after the preceding crop has been gathered, the sooner the better. The eyes of the root (and if economy in seeds be an object, but one eye need be left on a cutting,) should be deposited in rows two and a half feet apart, and at the distance of fifteen or eighteen inches apart in the row, and covered with the plow or hoe to the depth of three or four inches. The after culture, as regards mode and manner, is identical with that of corn. Poor land will yield an average product through a term of years, of no less than eighty bushels per acre, whilst the good hammock lands of the interior, or lands fertilized by the application of appropriate manures, will yield, (I think 1 hazard nothing in saying) from one hundred and fifty to two hundred bushels, and perhaps more, to the acre. A bushel of roots with defective machinery, will yield six pounds of fecula, whilst from some, more than nine pounds have been extracted by careful manipulation. With such improvements of machinery as the importance of this crop will speedily secure, I think an average yield of seven or eight pounds of fecula, may be safely anticipated. Bermuda arrow root now worth at wholesale from 20 to 25 cents a pound, is not better in appearance than the Florida article, and for culinary purposes is greatly inferior, as ascertained by the careful experiments of a lady every way qualified to test practically this product of the two localities. Other advantages connected with the cultivation of this crop are found in the capacity of the plant to bear up against drought or excess of rain, its exemption from the ravages of insects, the protracted season of three months or more, during which it may be prepared for market, and finaly its diminutive bulk as compared with its value, or with other crops, with the exception of tobacco.

Geological Survey of Canada.

W. E. Logan, the Provincial Geologist, has sent in his report to the Governor General of Canada, accompained with those of his assistants. They embrace the results of an examination of the Northeastern Coast of Lake Huron and the North and Southwestern shores of Georgian Bay, with an analysis of the several mineral springs in the valleys of the St. Lawrence and Richelieu rivers, and of the ore of the Wallace mines, &c. The Toronto papers say, it appears from the report that "a careful examination has determined the level of Lake Superior to be twenty one feet five inches above that of Lake Huron. This is important, as showing how little lockage a canal round the Sault Ste. Marie would require."

It is also ascertained that the Eastern coast of Lake Huron possesses few or no good harbors. The only two that are at all available for large vessels, are Tobermore and the mouth of the South Aux Sables river.

Niagara lime stone is found in large quantities in the districts from Dundas and Galt to Cape Hurd. It is an excellent building stone. Gypsum and Marl are found between the river Sanguine and the Aux Sables. Hydraulic lime was discovered at Point Douglas and in other places, and bituminous shales at Nottawasaga Bay.

The number of murders in England, last year, was 84, and the whole number in ten years was only 712. We believe that no other nation can exhibit a smaller list of capital r imes, for the same amount of population.

Claim for the Solar Magnetic Engine.

The following are Mr. Hubbell's claims for the Solar Magnetic Engine, described and illustrated in the present number of our paper:

"As respects the planetary magnets in their separate natures, I do not claim them; they being only the ordinary and well known kind of magnets. But I claim to be the original and first inventer of the solar magnet in its principle, or character, and the various modes of constructing it, herein set forth.

I also claim the mode of combining or placing any, or all, of said solar magnets relatively with each other, or together, as described.

I also claim the combination of the engines described, on the same shaft, or around the cog-wheel, or with the horizontal shaft, to which they unitedly impart their power, as described.

And finally, I claim the application of the planetary magnets, to revolve around or about the solar magnet or magnets, substantially in the manner and on the principles herein described."

Sugar Cane in the High Lands of the South.

The Baton Rouge Advertiser says: "are the highlands adapted to the growth and culture of the cane? It is no longer an experiment. Instead of going to the lowlands to open a plantation, the former are now selected as combining several very important advantages—security from overflow without the expense of building levees, is the first and most obvious. The cane does not grow so large as on the coast, but makes equally as good sugar—the juice requiring less boiling and a less quantity is required to make the same quantity of sugar. So that all things considered, the balance is in favor of the highlands. The last two years have brought a vast quantity of this land into cultivation, more, perhaps, than for any previous ten years. In this section, the sugar mill is rapidly taking the place of the cotton gin; the unoccupied lands are coming into cultivation, and even the worn out and abandoned cotton fields are found well adapted to the raising of this crop.

A Cure for the Bite of Venomous Animals.

Immediately on the introduction of the poison, make a positive pressure with a tube of any kind, sufficiently large to encompass the outer edges of the wound. By this process the superficial circulation is interrupted, and the venom is almost instantaneously exuded from the injured portion of the body. The rule applies to a musquito bite.

[The above is from an exchange. The plan we believe is a good one, but the difficulty lies in its application, especially in respect to the musquito bite. To adminster the tube to a moonlight musquito bite, requires a degree of occular accuracy which the author of the above must be fortunate if he possesses.

A Cholera Cure.

It is asserted by one who cured himself, that a tablespoonful of salt and a teaspoonful of red pepper, mixed in half a pint of hot water, and immediately swallowed, will cure the cholera. This is a simple dose, and for creating a sudden internal heat, its efficacy is obvious. This has been successfully tried on board some of the Liverpool and New York packets.

The Manchester Democrat states that one of the Sanbornton farmers informed him that not less than 40,000 tons of hay had probably been caught by showers during the past week in that State, and had been depreciated in value at least $20,000. This must be a serious draw-back upon the farming interets as great importance is attached to the hay crop. This yield this season has been more than the average in consequence probably of the abundance of rain during the early part of the season.

Errata.

In describing the Pile Driving machine, illustrated in our last number, for the name of Wm. T. Foster, inventor, read John T. Foster, and for Mr. Kiyler's address, 333 Ninth street, read 313 Ninth street, N. Y.

Griffin's Boiler Furnaces.

In reply to many inquiries which have been made at this office in regard to the validity of the patent known as Griffin's Improvements on Heating Apparatus, we subjoin the following facts without comment:—

December 5th, 1842, J. Clute and J. Seabury, of Albany, N. Y., obtained letters patent for an improvement in furnaces which the patentees say, "consists in the employment of a descending flue or flues, down which the draught is made to pass after it leaves the feed in the chamber of combustion, or that part of the furnace which contains the fuel. In furnaces construted on our plan, the supply of air is to be given by means of any suitable blowing apparatus, and by the obstructing of the draught by the descending flues, and the forcing on of air by the blowing apparatus, a degree of pressure is produced in the interior of the furnace, which has been found highly favorable in economising the heat, which is the more readily communicated to the article to be acted upon." Here follows the claim:—"What we claim as our invention is the combining of the descending flues with an artificial blast in furnaces, as set forth."

In July, 1847, Mr. J. Seabury patented another improvement, which we understand Mr. Griffin is agent or assignee of, and which is embraced with the patent of J. Clute & J. Seabury, and known and advertised as Griffin's Improvement in Heating Apparatus, for which letters patent was granted December 5th, 1842, and July 31, 1847. We know of no patent whatever granted to Griffin; if there is we would like to know it. Mr. Seabury's claim in his letters patent of July, 1847, reads as follows:—"What I claim is the forming of an opening or openings near to the lower part of the ascending flue, in the chimney stack, in combination with the descending flue, substantially as described, to check the draught of the chimney, and thereby to detain the heated gases under pressure within a furnace in the manner set forth.

Foreign Correspondence.

We have received an interesting letter from our foreign correspondent at Glasgow, which we will publish next week.

LITERARY NOTICES.

The Logic of Mathematics.—This is not the title merely of a new book, but the principle developed in *the* book, by one well qualified to do so, Charles Davies, L. L. D. The work "is but an analysis of that system of mathematical instruction which has been steadily pursued at West Foint over a quarter of a century, and which has given to that military school so much celebrity in the field of mathematical science," under Mr. Davies. Of course it is impossible for us to give a review of such a work, or even present the outlines of its plan in our columns. We can only state its objects and say whether, in our opinion, it is a book well adapted for our readers, or not. From a rapid perusal of its contents we believe it should find a place in every public and private library. It is tastefully printed and philosophically arranged for reference. The publishers are Messrs. A. S. Barnes & Co. No. 51 John street, N. Y. The price is $1,25. It forms a neat and handsome volume.

Spectacles—Their Uses and Abuses.—This is the title of an excellent work, translated from the French by H. W. Williams, M. D., of Boston. It is published by Phillips, Sampson & Co., and is sold by Mr. G. P. Putnam, Broadway, N. Y. The subject of the book is a most important one to every person.—There is not one person, however young, who does not look forward with not a little grief to the time when he must appear "with spectacles on nose." A knowledge of their use and abuse—fer they are abused very often, or rather, some people abuse themselves with them,—is certainly of great importance. We should have been better pleased had the translator used more familiar technical terms, for the benefit of common readers; and a few wood diagrams would have added greatly to its utility. Yet for all this it is an excellent book—one we can heartily commend.

Iconographic Encyclopedia.—Part 10 of this splendid work, published by Rudolph Garrigue, Barclay street, this city. It contains 20 plates, each one illustrating four or five subjects. The ancient habits, customs and games of the Romans are beautifully represented in the finest steel engravings. No work like this has ever been published in our country—its circulation should be wide and extensive.

Dictionary of Mechanics and Engine Work—Number 15 of this work, published by D. Appleton & Co., Edited by Oliver Byrne, contains articles on Force, Friction, Fringe Machinery, &c., besides a treatise on Fortification. In the article on Foundations we expected to see a description of Mr. Potts' method of sinking Piles.

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Hubbell's Solar Magnetic Engine.

(*Continued from First Page.*)

course, in this case the smaller pieces form the inside of the poles, and the outside of the connecting cylinder or back in fig. 1 and 2, and the inside in fig. 3, and each succeeding piece must be as much longer than this as the thickness of the plate requires to make it fit to the former; and also the pieces forming each succeeding layer should be set over the junctures of the pieces forming the preceding layer, as in fig. 8; a coil of the covered wire from the batteries may be put between each layer or between every second or third layer of plate or wire, to more effectually magnetize the said solar magnet. In the solar magnet, one circular end becomes a north pole, and the other one becomes a south pole; and the strongest magnetic power exists around the circumferential surfaces, and acts convergently and divergently to and from the common centre of the circle. This solar magnet may be either a permanent or an electro-magnet; when permanent, it should be of steel and be packed inside at the central part, F, and between the poles, G G, with loadstone, or it may be of wrought or cast iron, steel, or other material, and magnetized by means of a galvanic battery or batteries, in which case the coils of the covered wire should be wrapped in the space between the poles, both inside and outside of the cylinder or back, and also a coil or coils should be laid on the side of each pole, A A, thus and always covering the magnet with coils of covered wire as numerously, as heavily, and at every part, except the circumferential faces, as much as possible; and thereby giving these faces the greater magnetic power.

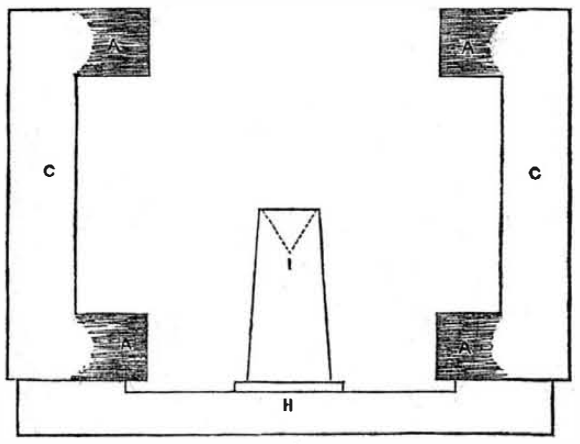
And now as to the construction of the solar engine: I affix the solar magnet to a strong wooden (mahogany, maple or oak, &c.) or suitable metallic base, H fig. 1, or H fig. 3, or H fig 4, the point I being the centre of this solar magnet; and around this solar magnet's magnetic surfaces I arrange the planetary magnets K K, 50 more or less in number, figs. 1 and 2; these are best made of numerous pieces of porous, soft wrought iron wire, or they may be solid, and of the ordinary horse-shoe form, or they may be straight; their ends, heads, or faces towards the solar magnet, may present the inverse or converse curve of its faces, or be straight-faced, or rounded; the inverse or converse is the best; the breadth of their faces should be about the same as that of and directly opposite the faces of the solar magnet, and each magnet must be separate and distinct from the others; in this way they must be attached to a revolving frame, or cylinder, governed by its own independent centre or shaft L, and this centre be near the solar centre, I, as in fig. 2, so that the planetary magnets, as they revolve around the solar magnet, may successively approach as near as possible, without contact, to its faces; and then may recede from its faces to nearly the utmost extent of its influence. The modes of suspending or securing central shafts and bases, thus relatively to each other, are numerous, and well known to machinists. I have in the drawing shown the shaft suspended vertically, as I deem that the best relative construction for the engine, and have rested the planetary shaft on the central column, or base which sustains the solar magnet, and rests on the general engine base, M. I have sprung a metallic arch or beam resting on columns, over the engine, and resting on the general base, for the purpose of receiving the upper end of the planetary shaft, L, and also to hold the charging keys of the planetary magnets, K K, *et al.*—The appropriative power of the engine can be taken from the upper part of this planetary shaft by cog-wheels, pulley-wheels, or any of the know means.

The beam, columns, and base, whenever the bulk is not material, are best made of wood, such as mahogany, maple, oak, &c.; so also the planetary frame is best made of wood.—The engine may also be suspended horizontally, in which case the planetary shaft may rest on an oak or other wooden frame, on each side of the solar magnet; this any mechanic will know how to construct in numerous ways, without directions from me.

The number of engines may also be increased to two, four, ten, or any other number on the same shaft, the shaft being either vertical or horizontal, and the engines either above or horizontal to each other; or each engine may rest on its own shaft, and their power be concentrated on a single shaft by means of cog-wheels, pully-wheels, or any of the known means of communicating power. One excellent method is to set numerous engines immediately under the circumference of a large cog-wheel, with a cog-wheel from the upper part of the shaft of each engine runinng in gear with it, and thus they all concentrate their power into it. Another is to set them under a horizontal shaft, and each give its power to it by means of a bevel cog-wheel on the planetary shaft, and another on the horizontal shaft.

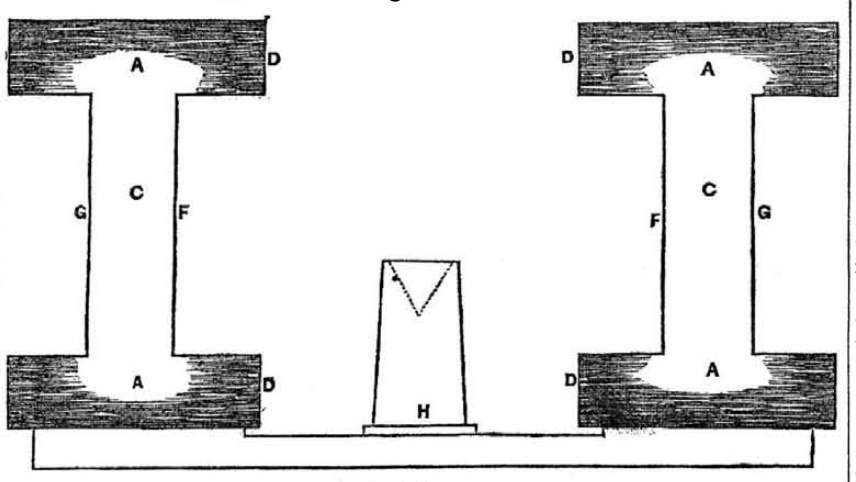
Each of the planetary magnets should be secured between two wooden rings, or otherwise, the revolving frame, or series of arms, or cylinder, N N, and each of these magnets is wrapped with covered wire to magnetize it

Figure 3.



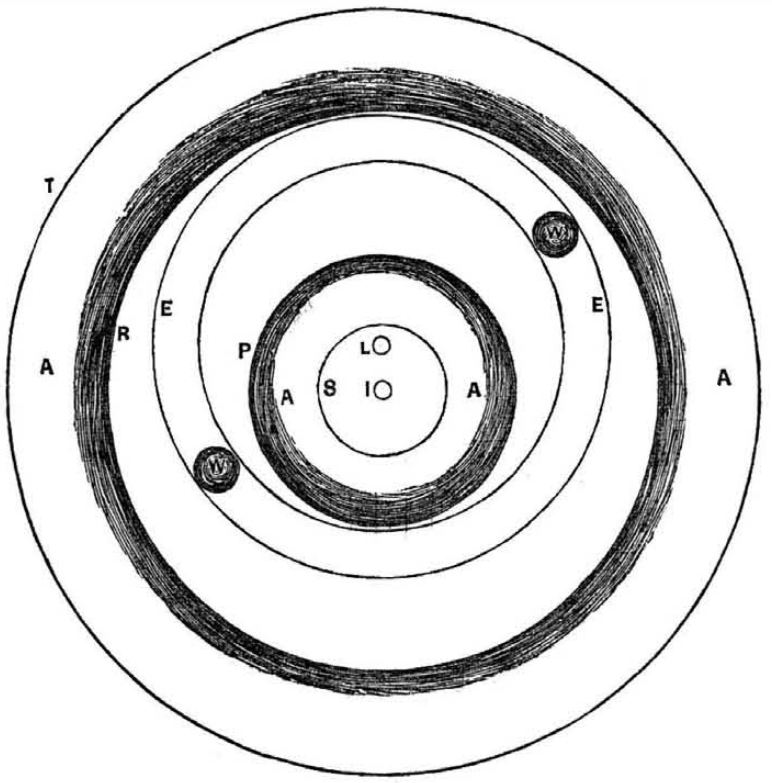
from a battery; which wires, U U U U, are led to near the planetary shaft, L, where they are held in and by slots cut through a wooden ring, and those from the positive poles are in contact with positive semi-circuit keys, and those from the negative poles are in contact with negative semi-circuit keys. It is well known that the positive pole or semi-circuitkey can be made negative and *vice versa*, by simply changing the wires from the one to the

Figure 4.



other nature of the battery. These semi-circuits, O O O O, around the planetary centre are four in number, are stationary with the arch or beam, and form two circuits, each having two breaks, Q Q Q Q, the one semi of each being positive, and the other negative; the one break where the poles change is opposite the perihelion or nearest point of approach to, and the other break is opposite the aphelion or point of farthest recedure from the solar magnet. The breaks consists of ivory, or other non-conducting substance; and as the wires from the planetary magnets, in revolving with their respective magnets, pass from one

Figure 5.



semi-circuit on to the other, either by platina or other metallic wheels on them, rolling in contact with the circuits, which is the best mode, or by having platina, or other metallic ends, which slide around against the circuits, they respectively cause their respective magnets to change from positive to negative, and *vice versa*, end for end; and thus the planetary magnets continuously approach the solar magnet by attraction, and recede from it by repulsion, being continually under its influence and revolving around it. It is evident that, in their approach to the solar magnet, they may not be magnetized, as it will attract them; but I deem it best to magnetize them at this time, as well as necessary on their recedure. Copper wire, covered with cotton or other substance of a non-conducting nature, is usually employed to wrap magnets in order to magnetize them by a galvanic battery. Any suitable covered wire may be employed in this engine, and wherever the charging keys and planetary wires are in a state of friction, platina is the best metal to use, as it will not readily oxidize; this fact is already well known in the art; therefore the semi-circuits of the charging keys (excepting the ivoy breaks) are best made of platina, also the ends of the planetary wires, and the little friction wheels that run on them and bear against the keys, are best made of platina.

To charge the planetary magnets as heavily as possible, each pair of opposite magnets should have their own circuits of keys, in which case the circuits may be very small and above each other, and each charged by a separate battery; or, if this is not done, it is best to make as many conducting wire connexions, to and at equal distances along the circuit of the charging keys, as there are planetary magnets, in order to distrbute the fluid and magnetize them effectively.

The revolution or the motion of the engine may be reversed, by mutually changing the wires of either the solar or planetary magnets in the battery. This may also be done by a simple lever with sliding conducting attachments, or in numerous ways. In the engine having its solar magnet's face on the inner circle, as in fig 3d, it will of course be seen that the planetary magnets are inside of its faces or circle; whilst with the solar magnet, as in fig. 1 and 2, having its faces on the outside of the circle, the planetary magnets must revolve outside of the face of the solar magnet; and with the solar magnet, having both the inside and outside circumferential faces, as in fig. 4, there must be two series of planetary magnets, the one to revolve inside, and the other outside. And also, when the solar magnet fig. 1 and 2 is combined inside of the solar magnet fig. 4, and at the same time the solar magnet fig. 3 is combined outside of fig. 4, these two series of planetary magnets have the whole attractive and repulsive power of these four solar faces thrown on them, to furnish appropriative power to the engine. When numerous series of planetary magnets are employed, presenting themselves to different solar faces, each series of planetary magnets should have its polar ends let into, and should stand between, two wooden rings or cylinders, having arms connecting them between the magnets, and extending from both series to a hub, by which they concentrate their power in its, their common centre or shaft, as the appropriative power of the engine. The heads or polar ends of the planetary magnets may have their faces curved, coincident with the inner and outer curves or circles of the rings holding them; and the straight magnets, having their heads or polar ends enlarged each side of the coils of wire, are best to present their faces to these combined solar surfaces.

In this system of magnetic machinery, the planetary path, E E, in figs. 5 and 6 respectively, by way of variable capacity, may be considered as composed of covered brass, or copper tracks, or electro-magnetic wires conductors, or keys, the one half between the aphelion and perihelion, on the one side of the solar magnet, separated from the other half between perihelion and aphelion, on the other side of the solar magnet, by ivory or other non-conducting substance; and one of the planetary magnets, E, be a conical wheel or rolling ball of soft wrought iron; the said keys being one positively and the other negatively charged. In this case, the balls or wheels will be continuously changing from positive to negative, and *vice versa*, as they pass the points of aphelion and perihelion, and

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thus run or roll around the solar magnet. In this instance, the planetary path need not be perfectly circular, but may be similar to the orbits of the planets, and the number of planetary magnets, wheels, or balls, with their respective paths or orbits, may be increased to any such number as the face, or size of the solar magnet, will admit of presentation to it. This variable capacity of the system, it will be preceived, is not so well calculated to give appropriative power, as where the power is imparted to the central shaft, L, as described, which may in this case also be done by coupling the two balls, by means of a wire running through shaft, L, jointed if the path be an orbit, or not jointed if it be circular.

Another variable mode of employing the solar magnetic princlple, or character, is displayed by fig. 9. This variable mode consists in providing the solar magnet with eight circular faces, two faces to each pole, A A, A A, A A, A A, so as to present four series of planetary, magnets, KK, KK, KK, KK, each series consisting of as many magnets as can be presented to the solar circuits or faces, to act in concert with them. This solar magnet has its four poles, P P, N N, PP, NN, converging and diverging to and from its centre, and also the same poles diverging longitudinally.

Between the poles are wooden diaphragms, Z Z, Z Z, Z Z, Z Z, to separate the negative and positive coils of wire that magnetize it, by means of the galvanic batteries; the letters P, between the poles, denote the positions of the coils of wire positively charged, while the letters N denote the coils negatively charged, and the letters P on the poles denote the positive poles, while the letters, N, on the poles denote the negative poles. By changing the wires from positive to negative, and of course *vice versa*, these poles change in like manner.

This solar magnet is, of course, continuously circular; fig. 10 is a side view of it. When the four series of planetary magnets, K K, *et al.* are presented to it, a cylindrical base, M, supports it, and the lower series of planetary magnets revolve inside of the cylinder base. This lower series of magnets may be dispensed with, losing however its effective power; and, in that case, the lower diaphragm may be extended down, and form the cylinder base; or the lower side of the solar magnet may rest on a flat wooden case. The series of planetary magnets within and out side of the circuit of the solar faces, approach and recede the same as those in the other figures; and the upper and lower series of planetary magnets approach and recede as they revolve about the solar faces, by the planes of their revolution being at acute angles, respectively, with the planes of the solar faces, or the the side solar faces caused by inclining their respective axles, or shafts, on which they revolve.

These axles are stationary, and sustain the shaft, L, of the inner and outer series of planetary magnets, and the hub or centre of the upper and lower series rests and moves on friction rollers; the said axles or shafts may also be made to revolve with them, by toggle-joints or bevel cog-wheels connecting them to the central shaft, L.

These series of planetary magnets change their poles at the points of perihelion, or nearest approach, and aphelion, or farthest recedure, as they revolve around or about the solar faces, similar in mode or principle to those presented to the other solar magnetic faces.

It will be apparent to any person, from this specification, that the number of solar magnets, and that the number of series of planetary magnets to constitute a single engine may be increased to any extent, on the system herein set forth. Also the solar magnet may be slightly changed in form, and still preserve the same distinctive principle or character; example—the poles of solar magnet fig. 1, fig. 3, fig. 4, respectively, instead of extending parallel to each other, may converge or approach each other, and thus resemble more minutely the horse-shoe curve; in this case, each pole, instead of presenting the form of a plane ring, would be the frustum of a cone, or, if with a curved side, the segment of a hollow sphere. The planetary magnets may also be slightly modified in form, still observing the general principles here laid down, in their relation to the solar magnet or magnets.

And various modes, the principle of which is well known, for wrapping the horse-shoe magnets, may be employed for wrapping the solar magnets with the covered wire, to charge them

Figure 6.

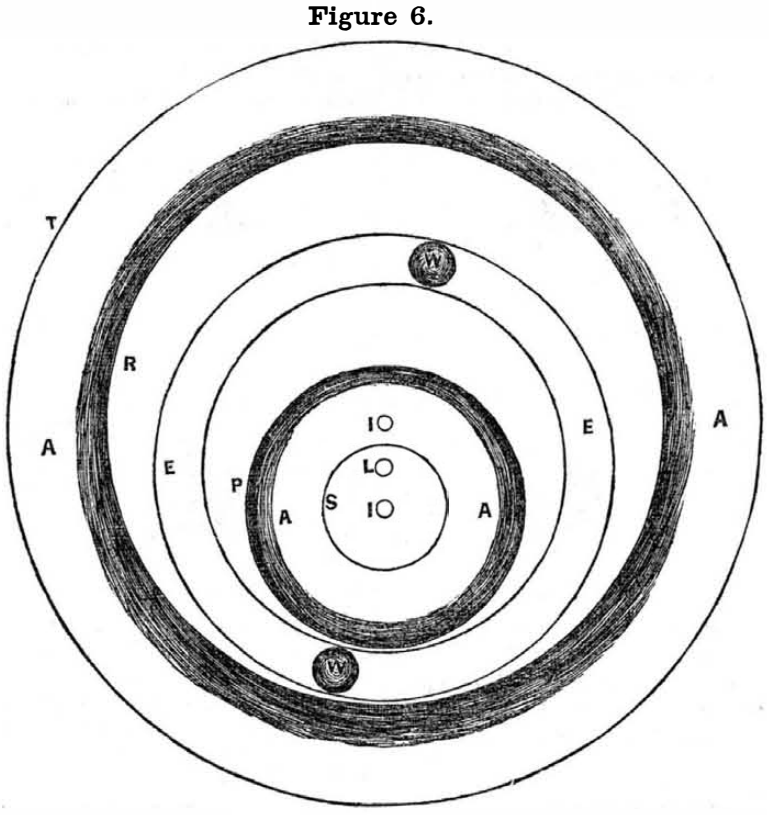
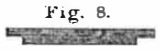


Fig. 7.

Fig. 8.



tem to the solar magnets. And I wrap the positive portion on one side of a wooden or other suitable diaphragm, and the negative on the other side, carrying the wires from one to the other nature, through the diaphragm, when and as I wrap numerous series of coils, the one over the other successively, and also when side by side. The diaphragm may be dispensed with, but it allows a greater body of wire to be coiled when desired without contact; and, if desired, still a greater body can be coiled with the positive and negative not distinctly separated, by dispensing with the diaphragm. I carry the positive and negative wire of each series of coils respectively, through an ivory bush let into the respective side of the solar magnet, by which the wires do not interfere with the faces of the solar magnet, and they charge it heavily with magnetism. The upper wires are generally led over the upper side, on a wooden flanch or ring, (two of which hold the outside coils in contact with the outer sides of the poles respectively,) until they reach near the centre of the solar magnet, where they are led down through its supporting wooden column, or, if metal, through an ivory bush, and, together with the lower wires, are attached to their respective poles or natures of the galvanic battery. To charge the solar magnet or magnets heavily, and thus make them most efficient, the galvanic battery or batteries should always be used; and the planetary magnets owing to their change of poles at the points of aphelion and perihelion, should always be electro-magnets, or made magnetic by means of galvanic batteries; except when only two planetary magnets opposite each other are used, they may be permanent magnets, and the solar magnet must then change its poles as they arrive at the points of aphelion and perihelion.

In order to equalize the magnetic density as near as possible between the repelling planetary magnets and the solar magnet, when all are electro magnets, the batteries which charge them should be connected, positive with positive, negative with negative.

The solar magnet fig. 1 and 2 may set within fig. 4 and thus have three solar faces acting on two series of planetary magnets, the inner series as in fig. 5 or 6, and the outer series as in fig. 1 and 2, both series affixed to the same shaft.

Figure 3. This formation of solar magnet may set outside of the form fig. 4 and thus have four solar faces acting on two series of planetary magnets; this, fig. 3, being relative to the planetary path, either as the outer magnet in fig. 5, or as the outer magnet in fig. 6.

Figure 5. L is the centre of the magnets' path, E E. A A of the inner solar magnet is the north pole, while A A of the outer solar magnet is the south pole, and *vice versa*. I is their centre. P is the face, and S the back of the inner solar magnet. R is the face, and T the back of the outer solar magnet. W W are two of the planetary magnets, of which E E is the path.

Figure 6. L is the centre of the planetary magnets' path, E E. A A of the inner, and also A A of the outer solar magnet, are both either north or else south poles at the same time. I I are their respective centres. S is the back, and P the face of the inner solar magnet; and T is the back, and R the face of the outer solar magnet. W W are two of the planetary magnets, of which E E is the path.

Another mode of applying the solar magnetic principle to use, by which the planetary magnets are made to imitate the action of the comets, that is to move around or about different solar centres, is to take several solar magnets, like figs. 1 and 2, and place two, three, four or more near to and within the circuit of the planetary magnets: the poles of the successive solar magnets being on the one side, or end, positive, the succeeding one negative, and so on alternating successively; and the other side, or end, *vice versa*. In this way the planetary magnets must change poles as they respectively arrive at the different solar magnets. A similar series of solar magnets may also be set outside of the planetary circuit, and act on the same mode. And the number of series of planetary magnets and solar magnets may be increased in this manner to any extent, constituting a single engine; observing that the solar magnets of different poles should never be placed within each other's influence, rather letting the attractive power predominate in the planetary magnets in this case, they representing the principle of comets moving about different solar centres, in which latter there should exist sufficient magnetism for neutralization as they respectively pass the points of aphelion, without the solar influences conflicting with each other."

Wm. W. Hubbell.

[The claim of Mr. Hubbell, for the Solar Magnetic Engine, will be found on the 2nd page.

Figure 9.

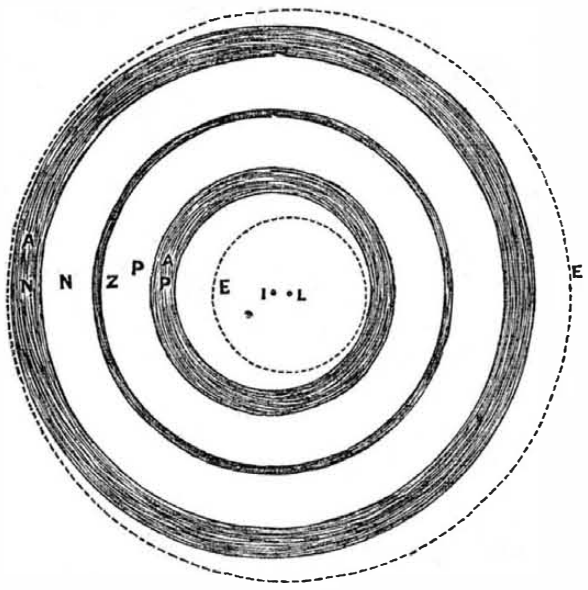
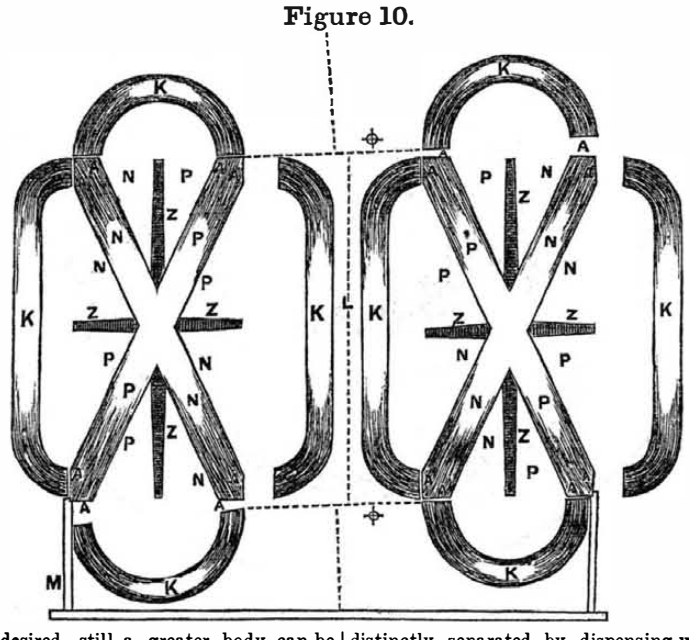


Figure 10.



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Scientific American

NEW YORK, AUGUST 17, 1850.

Advice to Patentees.

The number of patents granted every week will average about twenty, and the whole number which will be issued in 1850, will not come far short of one thousand. Of the merits of the great majority of these inventions, what does the world know? Nothing—absolutely nothing. The claims are read by the readers of the Scientific American every week, and this is all the knowledge the world gets of their merits or demerits. It would reasonably be expected, that every patentee would take the most judicious and business-like method of bringing the merits of his patent before the public; and what better way is there, what other sensible way is there of doing this, than by newspaper publication. Every patentee knows that his patent costs him, at least, sixty dollars, and some inventors expend, (injudiciously, we must say), hundreds of dollars on their models. Now, after a patent is granted, is it not unwise to let it remain a useless piece of parchment, locked up in the old iron chest? Certainly it is; if the invention has any merit in it at all, the only proper course to pursue in respect to conferring a benefit upon the public, and reaping a benefit from its sale and use, is to let the public know what it is The best way to do this—we do not speak disinterestedly, it would be hypocrisy to say so, but we speak what we believe and can prove to be true,—is to get engravings and a description of the same published in the Scientific American. Our circulation is among manufacturers, mechanics, engineers, carpenters, and a very great number of our highly educated and intelligent planters and farmers. As a class, they are devoted to improvement, and every new invention, which is an improvement, they are ready to adopt, if they can purchase at a reasonable price. The only reasonable way therefore, to bring improvements before the right kind of people to adopt them, is to publish the same in our columns, for general circulation. The local papers, where the patentees reside, should be employed for the local circulation, but for general circulation, we know, (taking the influence of the Scientific American into the calculation) that at least 50,000 hear and know something about every invention which is published by us. The expense to the patentees is literally nothing, for we get up engravings and publish them at very reasonable prices, and then the same engravings belong to the inventors, to be used by them for handbills, and for advertising in other papers. If patentees were fully aware of the large circulation of the Scientific American, and its *reasonable* influence, they surely would avail themselves of the most proper way to extend a knowledge of their inventions. The advice which we give, we believe, will be of no small benefit to inventors and patentees, if they take it. Some may say, "we speak only for the object of getting up engravings and reaping advantages ourselves." Well those who say so are welcome to their opinion; but whether patentees take our advice or not, we will, as we have done heretofore, maintain the character of the Scientific American as "being the best illustrated and most useful periodical of the kind in America."

New York Institution of Civil Engineers

A correspondent inquires of us about this Association—"what are its objects, &c." Its objects are to promote knowledge in all the various branches of science and art, and to cultivate a good feeling among its members. Its objects are good, we heartily commend them. Richard V. De witt, Esq., C. E., of Albany, is President this year. It numbers some of the ablest engineers in our State among its members. It meets semi-annually for the transaction of business, and the reading of scientific papers, &c., which are published regularly, forming an interesting volume. It had its last meeting in this city, and will hold its next at Albany in January, 1851. Every Civil Engineer in this State should belong to it.

More about the Gillard Light from Water.

On page 333 our readers will remember that we published the specification of M. Gillard, on the Electric Light. We had the specification on hand for a week at least before we published it, and we would not have done so at the time, because the specification was not a clear one, and we try to get every thing of that kind straight, but before we could receive correct information about it, a number of our daily papers had published it from the London Patent Journal, and a number of our subscribers requested us to publish it, because they desired to have the specification as it was, bound up in their volume. We commented upon the specification, and pointed out what was new, and stated especially that the platina burner was a beautiful invention. Since that, some papers have expressed their sagacity in scientific matters, by doubting the truth of the good effects of reflective platina to produce a white light, but here comes corroborative testimony to our views (we judged by comparative chemistry) from our correspondent F. B. W., of Manchester, Eng., who has presented a full description in the Manchester Guardian. The invention of M. Gillard has been introduced into Manchester by Mr. Kurtz, whose chemical works are at Cornbrook, Hulme.

The following is a plan adopted in the new process:—An inch pipe is connected with the steam boiler used in the general manufacturing process carried on at the works; and thence runs back to the retort furnace, passing underneath the fire bars, and passing up the front of the furnace, to the level of the bottom of a common D retort, about a foot internal diameter. A ¾ inch pipe is then carried the whole length of the interior of the retort; the underside of the pipe is perforated with three rows of fine and closely-arranged holes, those of the centre row being perpendicular, and the others slanting outwards. The retort having been brought to a white heat, its bottom being covered with broken charcoal, the steam being admitted, the gas is freely produced. From the retort, the water gas is passed along through ordinary purifiers (the same in fact that have been long used at the works,) and the effects are, that the water remains perfectly sweet and clear, but slightly carbonated, and the lime is coverted into chalk. The gas is not yet generaly used in Mr. Kurtz's works; but in a cellar about 26 yards long and eight or ten broad, three ordinary argand burners (with an addition, to which we shall refer) give considerably more light, of a more pleasing character, than would ordinarily be required in such a place for mercantile purposes, or, would be produced by a dozen batswing lights with ordinary gas. A newspaper could be read with ease, at a distance of 40ft. to 45ft. by the light from a single burner, with a reflector. The fact of the possibility of producing a gas from a decomposition of water has been known to scientific men for 50 or 60 years; the question has been, how to to render it available for the purposes of illumination. M. Gillard's invention, for this purpose, consists of a small circular cage of very fine platina wire, worked in a similar manner to the material for a fancy basket. This cage of wire is attached to a small brass frame, fitting on to the burner, so that the lower edge of the cage is brought immediately over, and at a small distance from, the perforations in the burner. Without the wire work, the gas burns similar to a large spirit lamp, emitting great heat, but perfectly useless as a means of illumination. But instantly on the addition being made, the flame apparently changes into a column of intensely white light over the whole surface of the wire work, with a slight appearance of an inner flame rising rather above it. The latter, however, disappears when a glass is added, and there is then not a particle of smell or smoke emitted. One burner in the counting-house has been found, by a rough calculation, to consume from 7½ to 8½ cubic feet of gas per hour; and with the consumption a photometer shows that its light is about 12 times as powerful as that given by one of the largest kind of composite candles. With regard to the injury to the platina wire frame, M. Gillard states that there are some at Paris which have been almost continually used for five years, without having suffered in the slightest degree and his conviction is, that with pure water gas, the wire would remain uninjured for an indefinite period. If one of the platina frames be placed over a common gas light, it is very soon destroyed; The frames used are about 1½in. deep and ¾in. in diameter. The heat thrown out by the gas is very great, but it is wholly devoid of smoke or smell; and on the hand being held over one of the flames, the sensation is rather that produced by steam, or hot vapour, then the dry, scorching feeling caused by common gas. An experiment has been tried, of burning a large jet, inside a shade on the hearth-stone and the heat diffused was most pleasant and genial, the effect being felt in every part of the room, almost instantly on the gas being lighted. A large pan of water was made to boil, by the flame from this burner, in a minute and a half; and an intention has been mentioned, of attaching to the pipe a flexible tube, and by this means boiling water on the breakfast, tea, or supper table. It is intended by Mr. Kurtz, to have the whole of his house warmed by the gas, and stoves fitted up for all culinary purposes; M. Gillard stating, positively, as the result of experiments, that he can by means of his gas roast a fowl, in five minutes, or a leg of mutton in 15 minutes.

New Discoveries.

There are some people who will not believe any thing but what they see, while others believe everything they hear. Both of these classes are wrong. The Washington Globe, if it does not belong to the first class, "has a strong squinting that way." In copying two of our receipts last week, it took the usual opportunity of *doubting* their value. This is all very well, to be sure, but it is only worth a doubt after all, for fact it has none to predicate a decision. It cannot let the Despretz diamond alone—every week it gets a poke in the eye. This ought to teach the Globe the value of such a diamond for a subject. It says it "does not believe in the Despretz Diamond, Paine's Light, artificial pearls, the London electric light, flying machine, the sea serpent, in English free trade disinterestedness, in French Republicanism, and in many other impracticabilities beside." The gist of this is, that Despretz did not produce a black diamond, no artificial pearls were ever made, Paine did not produce a light from water gas, no electric light was produced in London, there has been no flying machine, &c. We have no doubt, but if all mankind had been tinctured with this same blessed skepticism, the world would still be jogging along to the mill with the bag over the horse's back, containing a couple of bushels on the one side and a big stone on the other—and there would not be a single railroad, nor telegraph line in operation.

But the whole beauty of this skepticism lies in the description which it gives of a *flying machine* which recently ascended at Paris, and this, too, immediately after it signed its confession above of its disbelief in such affairs. It should have said—"We don't believe such a machine ever ascended at Paris, or elsewhere."

We dont believe every thing we hear, but we confess that we cannot resist ocular demonstration, and we have seen a Flying Machine, the Electric Light, and if not artificial pearls, at least artificial agate, rivalling the natural in every respect, and the editor of the Globe can see plenty of it, if he visits Pepper's Agate Works in old "Beaver Wyck." The sea serpent may do to throw in as a kind of a funny hotch-potch, but the most curious confession which the Globe makes, is a doubt about every new discovery which has been paraded before the world for the past two years. If this is not what it means, it should state what practical discovery, it believes has been made within the past two years, or not talk about the matter at all—this is the fair way of discussing such matters. It is mighty easy to say, "I doubt this and I doubt that," but a doubt is no better than a dream, without a reason attached to it.

Subscribers! bear in mind that a new volume of the Sci. Am. commences in four weeks.

Fire Damp.

We often hear of explosions in coal mines, but a great number cannot understand the cause of the explosions; they only know the explosion was caused by what is termed *fire-damp*. Some wonder what kind of a damp it can be, which causes an explosion, and some wonder how it is that the *damp* in deep wells puts out both light and life, while in coal mines it causes an explosion. There is a great difference between the two. The *damps* are wrong terms, liable to lead to a wrong conclusion respecting the nature of gases. Many gases in certain mixtures are highly explosive when ignited, just like gunpowder, and among these is the *fire* damp, or decarburet of hydrogen—light carburetted hydrogen, (CH^2). This substance is often pent up in coal mines, and is produced in stagnant pools. It is very inflammable—burning with a yellow flame and producing carbonic acid and water. By Sir Humphrey Davy's experiments, one volume of *fire-damp* mixed with one of air, burnt by the approach of a lighted candle, but did not explode—nor did it explode when mixed with three of air, and the explosive power is but small unless mixed with eight parts of air. It is not very easy to explode fire damp and air. It must come in contact with a flame, and iron heated to redness will not inflame it. It was a knowledge of this fact which led Humphrey Davy to invent the safety lamp. This is simply a covering of fine wire gauze around the flame. The cooling currents through the meshes prevents the flame from coming outside and the iron from getting to a bright white heat. When nitrogen is mixed in one part, to six of fire-damp and air, its power of explosion is destroyed, and one part of carbonic acid, to seven parts of the explosive mixture prevents it from exploding. There is much to be learned yet, about explosive gases. The investigation is somewhat troublesome and dangerous, but the discovery of gun cotton, and the white sugar powder within a few years, is evidence of progress in this field of chemistry.

New Railroad Switch.

Messrs. John Ruck & Robert Andrews, of New York, and J. S. Morton, of Newark, N. J., have invented an arrangement of a railroad switch, which is operated by the Brakeman in the train, by a strong lever, with a cam on its lower end, which projects down under the locomotive, and presses upon a projecting cam, which shifts one length of rails that are secured on joints, to move to the right track for the train. If the rails are laying right, the lever does not act on them, hence the cars move on in the right direction. To shift the track, the conductor, engineer, or brakeman pushes the lever down at a certain part of the road, and holds it firm until the train is over the shifting projections. When passing over, the rails are locked and immoveable. At night a lighted signal can give warning when the switch is to be operated, and if any danger is suspected in total darkness, the lever can be held down continually with but little trouble, and thus certain action will be ensured. Measures have been taken to secure a patent.

Will Saltpetre Explode—Verdict of the Jury.

The Coroner's Jury in the case of the Philadelphia explosions by which several persons were killed have rendered the following verdict:

"That the said William L. Bachman, David Mulford, Marcus Marcus, Caroline Marcus, Abigail Catharine Drake, and others, came to their death from injuries received by an explosion at the store of Mr. John Brock, occupied by Messrs. John Brock, Sons & Co., Berger & Buiz, and others, situate in Water street, below Vine, on the ninth day of July, 1850, at the fire which occurred on that day; and that the said explosion was caused by a large quantity of saltpetre and sulphur, and hay, straw, and other carbonaceous material, stowed in the said store, becoming mingled together, while the said store was on fire."

American Institute.

The Twenty-third Annual Fair of this Institution is to be held at Castle Garden on the first of next October.

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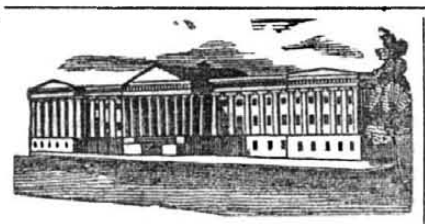

☞ Our weekly List of Patents and Designs contains every new Patent, Re-issue and Design emanating from the Department, and is prepared officially, expressly for the Scientific American, and for no other paper in the city, consequently other journals are obliged to wait the issue of the "Sci. Am." in order to profit by the expense to which we are subject, and of course must be one week behind. Those publishers who copy from this department in our columns, will, in justice to us, give proper credit for the same.

LIST OF PATENT CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending August 6, 1850.

To T. J. Barnes, of Lowell, Mass., for improvement in the manufacture of raw-hide whips.

I claim the manufacture of whips, or a whip having its external covering as well as its turk's heads or buttons made in whole or in part of corrugated strips, or bands of raw hide, laid or woven together, and on the handle or stock, substantially as herein before specified.

To H. Carver, of Edinburgh, Va., for improvement in scrapers used by cabinet makers.

I claim the scraper stock set in a frame for holding and guiding the scraper so that the forward end only of the frame shall rest on the surface to be scraped and thereby enabling the workman to manage the tool with the whole hand, apply a steady force, instead of using the fingers only, as heretofore for that purpose.

I also claim, reversing the position of the scraper stock and plate in the stock frame, whereby I am enabled to use both feather edges or corners of the plate successively without taking the plate from the stock, as herein set forth.

To E. Hart, of New Albany, Ind., for improvement in seed planters.

I claim the combined operation of filling and discharging the revolving cups or cavities in the planting rollers, by a single blow of the arms, on the said rollers, substantially as herein set forth.

To J. A. Hill, of Bloomington, Ind, (Assignor to J. R. Cannon, of Hiltonsville, Ind., and A. Hobbs, of Greensburg, Ind.,) for improvement in ballot boxes.

I claim the arrangement substantially as herein described of a moving band or tape imprinted with numerals and actuated by pedals ratchet movement and rollers or other equivalent device in connection with spring detention, latches and a libertaing brake or their equivalents, so that while the number polled for each respective candidate is exhibited by appropriate tape, each pedal as it is brought into play by the voter, is detained by its respective latch, until again liberated by the attending officer, thns effectually preventing the duplication of votes.

[We like to see a keen eye placed upon the purity of the ballot box—an inventor just the man to make something good out of it.]

To C. C. Knowles, of Lowell, Mass., for improvement in processes for amalgamating gold.

I claim dampening the sand or quartz with which gold is found, with a solution in soft water of choloride of sodium and tartaric acid mixed in about equal proportions, and applied to the sand, &c., prior to the introduction of quicksilver to effect amalgamation with the gold.

To Jesse Pannabecker, of Elizabeth Township, Pa., for improved method of making barrels for fire-arms.

I claim making barrels for fire arms, with a double seam or weld from two bars of metal previously rolled into a semi-cylindrical form, the whole operation being conducted as herein described.

To Thos. Parkinson, of Naples, N. Y., for improvement in hanging and operating gates.

I clam the manner of hanging and operating the gates, as described.

To E. M. Shaw, of Baltimore, Md., for improvement in tenoning machines.

I claim the planes for cutting the tenon whose irons are made to turn alternately from and towards the face of their respective stocks, so as alternately to cut and clear the lumber onwh ich they are acting.

To R. S. Sherman, of Napanock, N.Y., for improvement in Churn-dashers.

I claim the combination of the funnel shaped tubes, radial wings or plates, inclining upward and outward directly over the ends of the tubes, with the circular cap plate or disk, for the purpose as described.

To K. Spencer, of Brooklyn, N. Y., for improvement in Harness saddles.

I claim the combination of the separated elastic plates, with the skirt portions of the casting, and the pads, substantially in the manner herein set forth; for the purpose of causing the pads to have a spring and equable bearing upon a horse, and to adapt themselves to horses of different sizes and conditions.

To Wm. Vine & J.H. Ashmead, of Hartford, Conn., for improvements in machines for beating gold.

We claim the combination of the adjustable differential cams, with the pendulums, by means of which the packet is shifted under the hammer so as to regulate the distribution of the blows upon it, as herein set forth.

To K. Vogel, of Westbrook, Me., for improvements in machinery for dressing weaver's harness.

I claim the within described combination of the size or glue receptacle and the rotating brushes, with each other and with the shafts, (two) the screw shafts, (two) the sliding rod, the lever, the clutch, the pulleys, and the driving pulley, by which the brushes, (two) are made simultaneously to rotate on their axes and to alternately traverse from one end of the harness to the other, (or any portion of it,) and deposite the size or glue evenly and smoothly upon the threads of the harness substantially as herein set forth.

In combination with the size or glue receptacle and the rotating and reciprocating brushes, above set forth, I also claim the imparting reciprocating movement to the frame, in which the harnesses are placed simultaneously with the combined movements of the said brushes, substantially in the manner herein set forth.

I also claim the making the sliding frames of such shape and capacity as to receive two sets of harness, when it is combined with the shaft, the pulley, the crank or lever, the elastic lever, the pitman, and the crank wrist, substantially as herein set forth; by which, without stopping the machine, a dressed harness can be removed from the frame and an undressed harness secured in its place whilst another harness is being dresses with size or glue in the opposite receptacle of the said frame, substantially in the manner herein set forth.

To Wm. & Matthew C. Walker, of Lancaster, Pa., for improvement in Churn-dashers.

We claim the double curved, shaped dasher, with the grooved pieces, in combination as herein described, for the purpose herein set forth.

[Queer claim.]

To James White, of Milton, Pa., for improvement in Cooking Stoves.

I claim the manner of forming the front driving flues, on either side of the stove, by recessing the centre of the front plate, above and beneath the plate forming the hearth, and bottom of the fire chamber, and inserting plates, to form the insides of the flues, in the fire chamber, so that they can be replaced when burnt out without disturbing the sections of said plates below the hearth, as described.

To E. K. Wisell, of Warren, Ohio, for improvement in Tenon-bits.

I claim the combination of converging slides with a pair of planes, the latter being combined with the former in such a manner that by presure and turning they are caused to approach each other and reduce the extremity of the spoke to which they are applied substantially as herein set forth the slides and planes being turned by a hand brace or by machinery.

Massachusetts Coal.

The great shaft sunk by the Mansfield Coal Mining Company has now attained a depth of about one hundred and fifty feet; having passed through another vein of good coal. It is expected that the mammoth vein will be reached when the miners arrive at a depth of about 165 feet.

[This will be but a small depth in comparison with some English coal mines, some of which are over 100 fathoms.

Judge Woodbury's Charge.

In the Woodworth Planing Machine case, referred to last week,—Mason vs. Tallman,—the Judge said that the chief difficulty in the case arose from the 18th section of the act of 1836.

The section gave an extension on certain conditions, and further provided that "the benefits of such renewal shall extend to assigneees and grantees of the rsght to use the thing patented, to the extent of their respective interest therein." Under this last clause the defendants had a right to use these machines during the extension of seven years, given under the act of 1826, from 1842 to 1849. But upon what ground, then, can this provision be extended to a new, separate and subsequent renewal, contalning no such provision, and made by Congress rather than the Patent Office Board. It cannot be "that the orignal contract between these parties looked to any renewal, or benefits under any renewal, though if the parties so intended they might in express words have included in their contract a right under any further renewals, as well as the term then to existance." But the Supreme Court gave this right during this term from the effect of this clause of the 18th section and not by force of their contracts.

"The contract, then, not giving the use claimed, the argument for the defendent seems to be that clause of the 18th section, by mere construction of the law, governs this last renewal as it did by the express terms." "To be sure, if both acts of Congress related to the same kinds of words applicable to both renewals, then more plausibility would exist for this claim, on the ground that the two statutes might be regarded as *impars materia*."—Dwarrie on Stat., 700.

"But they do not so relate or refer, and though the various renewals respect the same patent and thus are in one sense the same general matter, yet they are effected by different tribunals and made at different periods, are for different terms, and with apparently different provisions on some points." "It is also often justto make them different, as assignees may need or deserve some benefits under the first extensions as well as the patentee, but seldom under a second one." "Here the benefits have been given by the act of 1836, in all the first renewal, and in the case of Oliver Evans as well as Thos. Blanchard, benefits were given in the first renewals made by special acts of Congress, but not in the second renewal from the same source." "The particular language used as to each term must control, and especially if strengthened by reasons for any difference introduced."

"Here the act of 1836 expressly extends the benefit of the first renewal to assignees and grantees, while the act of February 25th, 1845, giving another renewal of seven years after Dec. 27th, 1849, does not in terms extend its benefits to any extent whatever to assignees or grantees." "The act of 1836 also uses no expressions applicable to assignees or grantees having in any way the benefit of a renewal, unless it be one made by the Board, which is generally the first one granted." "It does not in any way purport to be a general provision to benefit them by all renewals, and whether made by the Board or Congress, but on the contrary, those by the latter are not alluded to, nor was there any occasion to allude to them or to include them, for Congress when making renewals could introduce any conditions it might deem proper, but the Patent Board could not, and hence the Congress enacted a particular permanent provision in respect to the renewals made by the Board, and theirs only, leaving others to be regulated by Congress when acting on each particular case, varying the provision as justice should seem to require on the particular facts in each case."

"There is, too, no general principle of jurisprudence or legislation by which a grant of land, privileges or patent rights for a specified number of years can be held," to enlarge the term, "whether then possessed or afterwards acquired by the grantor."

"The argument further contended that the defendants had a right to expect to be protected after the first term of the patent, and that on this account they were especially exempted during the first renewal, and ought in justioe to be deemed free under this especial one. The first answer to this, is that when they originally bought it was under the well known and well understood contingency that Congress might grant any number of renewals to the patentee, giving the grantees benefits or not, as they might deem proper. The next answer is, that parties who never had interest, and who were preparing to make and use machines after any existing term should expire, ought also in justice to be exempted as well as the defendants, and in this way it will be seen that that the renewal granted for the benefit of the patentee and at his request, would be frittered away and prove of little or no advantange to him, but rather be useful to others not named in the renewal or nor embraced in any general provision on the subject."

"But a final and conclusive answer to this whole position is, that persons cannot claim any privilege under any law or contract on considerations of doubtful equity, when the privilege is not named in any law or contract as extending to them, and belongs by law and justice to others, such as patentees themselves."

In a like case in New Hampshire, Blanchard vs. Harris, decided by me in 1847, "where one renewal by Congress expressed that those who had erected machines, after the first term had expired and before the passage of the new act, should enjoy the benefit of the renewed term in the free use of those machines, they did not continue to enjoy it under a second renewed term where no such privilege was conferred and no reference made, so as to extend longer the privilege conferred as to the first term." "Congress might well think that such a privilege possessed for one term free was sufficient favor to a grantee, seven years might be enough, without requiring, this would, fourteen; and as the renewals, when not otherwise expressed, are in law as well as in fact usually made on the reqnest and for the benefit of the patentee who is the inventor, and generally the sufferer, they ought in justice to be confined to this emolument when not otherwise clearly and expressly provided by Congress.

"The decision of the Supreme Court in Evans vs. Jordan, 9 Cranch 199, is understood to have proceeded on similar facts and principles, and the cases of Bloomer vs. Curtis, and Bloomer vs. Vaught, in the U. S. Circuit of Louisiana, February, 1850, and the cases of Woodworth *et al* vs., Babour *et al.*, in Maine, April, 1850, before Judge Ware, and Woodworth *et al* vs. Curtis *et al.*, before Judge Sprague, in Massachusetts, all seem to concur in like views, though the reports do not yet appear in a very reliable form."

"It may be proper to add, that the case of Wilson vs. Simpson et al., 9 Howard, in which an opinion was given by the Supreme Court at its last session, does not contain any point like the question arising here." "That case showing what was considered and settled is now before us, and contains no opinion on this last question, and I have said it could not, because it was an old case which had as early as 1846, been under consideration in the Supreme Court on a division of opinion in the Court below, and been sent up with instructions, 4 Howard, 709, 711."

A Stalworth Workman.

John Williams, a Welchman, employed in straightening rails at the iron works on the Conestoga, Lancaster county, Pa., uses a sledge weighing ninety pounds. Every rail made requires at least seven blows with his immense hammer to straighten it, and as all the rails are straigtened by him, he is compelled to give nearly one thousand blows with it every day. It would seem as though the human frame was not capable of such tremendous exertion, yet Williams enjoys excellent health, and apparently grows stronger with every day's exercise.

Iron Bridge.

A correspondent inquires of us, "whose bridge was it which fell lately on the New York and Erie Railroad?" It was Mr. Rider's, we believe. These bridges have been highly spoken of for all this. It is illustrated in Vol. 1, Sci. Am.

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TO CORRESPONDENTS.

"T. W., of N. Y."—The power of the wheel depends only on the height of the fall and the quantity of water. If then you have fifteen inches back water, it just takes away that much of the fall, and as it is eleven feet, there must be a loss of 10 and a little over ½ per cent. of power by the back water.

"J. D. B., of Pa."—Scott's Millwright and Engineer's Assistant is the book you want; its price is $24. It is high in price, but it is worth it; it is the one we recommend as first rate.

"J. H. C., of Pa."—We will soon attend to your request.

"N. C., of N. Y."—Has not your cut of the cider mill been published in some other paper? Be pleased to answer this as soon as possible.

"N. H., of N. H."—Mr. Woodbury cannot hinder you from merely using stationary cutters; they are old and well known.

"J. F. D., of Brooklyn."—You have been a little overlooked; it has been found that the sulphate of copper is the best preservative of wood. The manner of applying it is patented here on the basis of the English patent. We cannot tell how extensively it is used.

"G. B., of Ohio."—Woollen warps are not starched. You can find a description of the dressing frame in Ure's Dictionary; it is for cotton warps. The price of Ure, with supplement, is $6, we believe. It is also explained in Barlow's Encyclopedia; price $13. These books can be found at all the large publishers.

"J. J. B., of N. Y."—The British Government at one time offered a reward for perpetual motion, but the reward is a dead letter now.

"M. C. F., of N. Y." —Your description of the brake is too vague for us to express an opinion upon; nevertheless we think you have got something new, and should advise you to forward a model to this office at once. It would probably cost you about $50 to make an application for a patent.

"J. S. C., of N. H."—Your *improved* Cider Mill is an ancient invention; you could not get a patent upon it, is our opinion.

"M. & B., of Pa."—Your enquiries in regard to the "Key Stone" patent stove we cannot answer.

"A. & M., of O."—Attempts have been made to ascend inclined planes with locomotives, but they did not prove successful. One mode proposed was furnishing a duplicate track composed of cogs, and supplying the locomotive with an extra set of driving wheels on the periphery of which were cogs to mesh into the cogs in the duplicate track; the weight of the train, however, resting on the main track.

"E. B. B., of S. C."—Your order was received, and we mailed $40 to your address on the 12th inst.

"N. M., of Pa."—There are no first rate works upon millwrighting. Evan's is old but very good, price $3. We do not think such an apparatus as you want is made in this city, we know of none.

"A. M. C., of Me."—Your communication reached us safe. It is a severe one to examine, and you must wait patiently until we have time to go over it with care.

"D. M., of Miss."—A solar microscope is nothing more than a magic lantern, the light of the sun being used instead of that of lamp. It consists of two lenses, one of which is called the condenser because it is employed to concentrate the rays of the sun, in order to illuminate more strongly the object to be magnified. The other is a double convex lense, of considerable power by which the image is formed. To these is added a plane mirror for reflecting the rays of the sun on the condenser.

"G. C. S., of N. Y."—Lapis Lazuli is a zinc stone, from which is prepared ultra-marine. The latter is a blue pigment of great permanence, prepared entirely until lately, from the lazulite. It is now made of silica, alumina, soda and sulphur.

"J. D., of Pa."—Your model reached us with some considerable delay; we find upon examination that it is entirely unfit for the Patent Office—and it is with much difficulty that we can obtain a clear understanding of it. We should advise you to make a model of smaller size and more compact. This course at present seems best, as we are laboring under great disadvantages to understand this one.

"L. & J., of S. C."—We shall attend to instructions in regard to the belting.

"G. P., of Md."—We are surprised at the contents of your letter, and regret the circumstances. We will address Mr. W. calling his attention to the matter.

"H. T. P., of S. C."—We have to acknowledge the receipt of your favor of the 4th enclosing draft for the lathe. The one for the R. R. Co., was forwarded on the 1st. inst.—You have it probably before this. The instructions were given in a letter under the same date. We have been somewhat tardy in forwarding the compasses, and hope you will excuse the delay. They will be sent by the next steamer.

"A. D. B., of Geo."—We will attend to your orders with as little delay as possible.—You have our thanks for excusing the little omission in your previous instructions.

"C. M. M., of Pa."—We wrote you a few days since for a drawing of your invention; we hope you will send one for us to examine.

"J. F. P., of Florida."—Your favor of the 22nd ult., together with the pamphlet reached us by mail. We shall examine the subject at as early a date as possible.

Money received on account of Patent Office business, since August 6th, 1850:—

S. B. H., of N. Y., $50; S. & T., of Phila., $30; L. & Z., of N. Y., $55; A. W. P., of O., $20; P. McK., of Ga., $10, and M. A. & R., of N. Y., $20.

To our Correspondents.

In consequence of the absence of the Corresponding Editor during last week, several communications have remained unanswered; they will meet early attention, as he is now at his post, rejuvinated by the balmy atmosphere of New England, than which none other can be better for poor city mortals, who dwell amidst its din and heat.

He would take this occasion, also, to return thanks for many civilities extended to him while absent.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office; stating the name of the patentee, and the year the patent was granted (adding the month of the year when convenient), and enclosing one dollar as fees for copying.

Back Volumes Scientific American.

We are obliged to inform our patrons that complete sets of all the past Volumes are entirely exhausted.

Those desiring to secure Volume 5 but have delayed subscribing at first, are advised to remit $2 without delay or they may be disappointed in getting a volume at all, should they wait until the Nos. are all published?

Important Notice to us!

Whenever any of our friends order numbers they have missed—we shall always send them, if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

ADVERTISEMENTS.

Terms of Advertizing.

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them for any price.

TO MACHINISTS.—The 6 feet Planing Machine offered for sale, by Faulkner & Lewis, in the four previous numbers of this paper, is now offered for the low sum of $500. The finish is unexceptionably good in every particular, is worked by three pulleys and one belt; the speed is 340 back to one forward; the rack is divided into fifths, which enables it to plane perfectly smooth, which can be tested before purchasing. 46 4*

JUST ISSUED—A new edition of Minifie's Mechanical Drawing Book, substantially bound in paper, which can be forwarded through the mail.—Price $3. For sale by MUNN & CO., Agents, New York. 42tf.

Patent Office.

128 FULTON ST.

NOTICE TO INVENTORS.—Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procuration of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms. Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as will enable inventors to adopt the safest means for securing their rights.

Arrangements have been made with Messrs. Barlow and Payne, Patent Attornies, in London, for procuring Letters Patent in Great Britain and France, with great facility and dispatch.

MUNN & CO.,
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AMERICAN AND FOREIGN PATENT AGENCY.

WE WOULD remind our numerous friends throughout the country, that we still continue to conduct the business of procuring Letters Patent for new inventions in this and all foreign countries, where the right is recognized. Since making arrangements with those eminent attorneys, Messrs. Barlow, Payne & Parken, Editors of the London Patent Journal, we have secured and managed through them, several foreign applications, with the utmost economy and facility. Inventors and others, desiring advice upon this subject, can correspond confidentially with the Editors of this paper.

PATENT ROCK DRILLING MACHINE—The celebrated Rock Drilling Machine, invented by Messrs. Foster & Bailey, of this city, and described with an engraving on page 153 of Vol. 3 of the Scientific American; is now offered for sale in rights to suit purchasers. The machine has been thoroughly tested upon all kinds of rock, and its superiority over every other drilling machine that has yet been invented, must be apparent to every one who has had experience in using machines for this purpose. A silver medal was awarded to the inventors by the American Institute, and while it was exhibiting at the Fair for a few days, it attracted crowds to witness its simple but successful operation. A model of the machine, with the "Silver Medal," may be seen at the Scientific American Office, and any letters of enquiry concerning the purchase of rights may be addressed, (post-paid) to MUNN & CO.

P. S.—A valid patent is secured on the above, and the public are cautioned not to infringe the claims.

Patent Rights for sale for any State, county, or section, and working drawings furnished to the purchaser. 47tf

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Ranlett's Architecture, 2 Vols., bound, - $12,00
Minifie's Drawing Book, - - - - 3,00
"Scientific American," Vol. 4, 40 Nos., unbound, 1,00
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Scribner's Mechanics, Tuck, Gilt, - - 1,25
Treatise on Marine and Naval Architecture,—
published monthly, 12 Nos., each - - ,75
Leonard's Mechanical Principia, - - - 1,50
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Duggan's great work on the Stone, Iron, and Wood Bridges, Viaducts, &c., of the United State's Railroads. Published monthly in parts to be completed in 12 parts. Parts 1, 2, 3 4, and 5 now ready, each - - - - - ,75
N. B. This work is supplied to subscribers only.
Graefenberg Manual of Health, (noticed in No. 41,) an excellent work, bound, 75cts., unbound, ,50
N. B. The latter sent by mail.
Foote's Counterfeit Detector, a new and enlarged edition, with glass, mailable. 1,00

PROSSER'S PATENT LAP-WELDED Boiler Tubes—Diameter, Number and Length of each at date:—

Inches.	In Stock.	Afloat.
1 1-4 - -	1221 7-0 - -	—
1 1-2 - -	142 10-6 - -	120
1 3-4 - -	36 10-6 - -	—
2 - -	350 10-0 - -	—
2 - -	893 12-0 - -	420
2 - -	944 14-0 - -	—
2 - -	1278 15-0 - -	—
2 - -	66 6-6 - -	—
2 - -	83 4-10 - -	—
2 1-4 - -	356 15-0 - -	497
2 1-2 - -	252 15-0 - -	210
2 3-4 - -	350 15-0 - -	—
3 - -	— 15-0 - -	360
4 - -	28 15-0 - -	18
5 - 1	1 15-0 - -	—
6 - -	14 15-0 - -	—

THOS. PROSSER & SON, Patentees,
August 13, 1850. 28 Platt st., New York.

CLOCKS FOR CHURCHES, PUBLIC Buildings, Railroad Stations, &c.—The subscriber having made important improvements in the construction of Clocks, especially in the apparatus for counteracting the influence of the changes of temperature upon the pendulum, and in the retaining power, (which keeps the clock going while being wound up,) together with a most precise method of adjusting the pendulum to correct time, are prepared to furnish time-keepers of a very superior quality, both for accuracy of time-keeping and durability. They speak with confidence, from having tested their performance for several years. The terms of payment will be so arranged as to afford purchasers ample opportunity to test their qualities. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island. 40 3meow*

THE UNIVERSAL COUNTERFEIT AND ALTERED BANK NOTE DETECTOR AT SIGHT.—A System of Infallible Detection, applicable to all Banks in the United States, now in circulation or hereafter issued. Complete in Seven Rules with thirteen Diagrams and 17 illustrations on steel, for self-instruction. Improved and illustrated by H. C. Foote. Price $1, including a magnifying glass:—mailable. Address Messrs. Munn & Co., Office of the Scientific American.

P. S.—All former purchasers who have not received the steel illustrations will now receive the same on sending their address (post-paid) as above.

CUTTING ENGINE FOR SALE.—The subscribers have for sale a superior and handsomely finished Cutting Engine, for cutting either spur, bevel or spiral gearing, in infinite variety, from the smallest up to 5 feet in diameter, the index having 26,000 holes. The machine has been but little used, and when new cost $700, and is supplied with iron cones, loose and tight pullies for driving belts. Address TALLCOT & CANFIELD,
47 4* Oswego, N. Y.

12 POWER PLANING MACHINES.—SCRANTON & PARSHLEY, New Haven, Conn., have now finishing off 12 power Planers that will plane 8 feet long, 27 inches wide and 24 inches high; these planers are of the first quality, are self-feeding every way; the table is worked by a rack and pinion; the bed is 12 feet long. With each planer there is a splining head and counter shaft, pullies and hangers. They weigh about 4000 lbs.; the price, boxed and ready to ship, is $625. Also 12 hand lathes, with back gear on iron shears, and legs 7 feet long, swing 20 inches, about 700 lbs. weight—$75. These lathes are of the first quality. 45tf

ALCOTT'S CONCENTRIC LATHES.—We have on hand a few of these celebrated Lathes, which the inventor informs us will execute superior work at the following rates:—

Windsor Chair Legs and Pillars, 1000 per 11 hours. Rods and Rounds, 2000; Hoe Handles, 800; Fork Handles, 500; Broom Handles, 150, per 11 hours.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch, and work as smoothly as on a straight line, and does excellent work. Sold without frames for the low price of $25—boxed and shipped, with directions for setting up. Address, (post paid), MUNN & CO.,
14tf At this Office

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by QUARTERMAN & SON,
48tf Painters and Chemists

COTTON, WOOLEN AND SILK MANUFACTURERS' DEPOT.—ANDREWS & JESUP, No. 70 Pine st., N. Y., dealers in articles for the use of Cotton, Woolen and silk manufacturers, and agents for the sale of shearing, carding, burring, napping, wool-picking, flock-cutting and waste machines, regulators, satinet and jean warps, &c. Weavers' reeds and heddles, bobbins and spools, of every description, made to order. Sperm, lard and olive oils and oil soap. 40tf

APPARATUS FOR BORING CYLINDERS for sale—Price $500, originally cost $1000, and is as good as new.—A Vertical Boring Machine, eleven feet long, with apparatus for correctly boring iron cylinders of any size, from 8 inches to 4 feet diametor. This machine is in good order and complete, and the only reason for its being offered for sale is on the ground of the owner relinquishing business. The machinery will be properly packed and placed on shipboard for the price above specified, ($500.) Letters concerning it may be addressed (post-paid) to this office. MUNN & CO. 46 tf

STEAM ENGINES AND BOILERS.—The undersigned has for sale one engine of 12 horse power, 1 of 6 and 1 of 5 horse power, new and of good quality; also one second-hand engine and boiler, 14 horse power, for $950, in good repair; 1 of 6 horse power, in good working order, with boiler, for $300. Steam Boilers made to order at the lowest cash prices and of the best materials; also planers, fan blowers, heaters, pumps, shafting pullies, &c., at No. 4 Howard st., New Haven, Ct. AARON KILBORN. 42 6*

WOOD'S PATENT SHINGLE MACHINES—These excellent machines, illustrated and described in No. 23, Vol. 5, Scientific American, are offered for sale in Town, County and State Rights, or by single machines. There are three sizes, the first cuts an 18 inch shingle, price, $100; 2nd cuts 24 inch, price $110; 3rd, 28 inch, $120. Orders addressed to J. D. Johnson, Redding Ridge, Conn., or to Munn & Co., "Sci. Am." Office, will meet prompt attention. 36 tf

MACHINERY.—S. C. HILLS, No. 12 Platt Street, N. Y., dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills Kase's, Von Schmidt's, and other Pumps, Johnson's Shingle machines, Woodworth's, Daniel's and Law's Planing machines, Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines, Belting, machinery oil; Beal's patent Cob and Corn Mills; Burr Mill, and Grindstones, Lead and Iron Pipe, &c. Letters to be noticed must be post paid. 46tf

BURR MILL STONES.—We have made arrangements which will enable us to supply all kinds of French Burr, Holland and Esopus Mill Stones of the best material and manufacture, at the lowest prices. Burr Mill Stones made to order and warranted to be of the best quality; Burr Blocks for sale.—Orders addressed to MUNN & CO., post-paid, at this Office, will meet with prompt attention. 41tf

MATTEAWAN MACHINE WORKS.—Locomotive Engines, of every size and pattern. Also tenders, wheels, axles, and other railroad machinery. Stationary engines, boilers, &c. Arranged for driving cotton,, woolen and other mill. Cotton and woolen machinery of every description, embodying all the modern improvements. Mill geering, from probably the most extensive assortment of patterns in this line, in any section of the country. Tools, turning lathes, slabbing, plaining, cutting and drilling machines. Together with all other tools requried in machine shops. Apply at the Matteawan Co. Work, Fishkill Landing, N. Y., or at No. 66 Beaver st. New York City, to
40tf WILLIAM B. LEONARD, Agent.

WOODWORTH'S PLANING MACHINE—For sale, the right to use this justly celebrated labor-saving machine in the following States, viz. Pennsylvania west of the Allegheny Mountains, Virginia west of the Blue Ridge, Ohio, Indiana, Kentucky, Tennessee, Wisconsin, Iowa, Missouri, Arkansas, Texas, Louisiana, Florida, Alabama and Mississippi. For particulars apply to the Proprietor, ELISHA BLOOMER, 304 Broadway. 45 6*

FOREIGN PATENTS.—PATENTS procured in GREAT BRITAIN and her colonies, also France Belgium, Holland, &c., &c., with certainty and dispatch through special and responsible agents appointed, by, and connected only with this establishment.—Pamphlets containing a synopsis of Foreign Patent laws, and information can be had gratis on application JOSEPH P. PIRSSON, Civil Engineer,
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FOR SALE.—Roaring Run No. 1 Metal, unequalled for car wheels, or work needing great strength and fluidity. Address F. B. Dean, Esq., Lynchburg, or the undersigned, at the works.
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Scientific Museum.

To Color Nankeen.

(Continued from page 376.)

Last week we gave a description of the method of dyeing Nankeen by lime water and the sulphate of iron—the rationale of which was, the complete oxidization of the iron by lime. We will now describe the way to dye "Madder Nankeen." This is the best nankeen color, as it will wash beautifully in soap, and not be affected with weak acids.

Take the cotton cloth (unbleached) and boil it well in strong lime water for four or five hours, until all the natural oil which is contained in the fibres of the cotton, is removed—this is essential to produce a good nankeen. If any of the oleaginous matter is left, the color will be too reddish, approaching to a salmon color. After the cotton is well boiled, it must be well washed, and then handled in a copper or tin kettle, kept near a scalding heat for one hour. In the kettle should be plenty of water to allow free handling, and there should be four ounces of alum dissolved in it for every pound weight of the cotton. The goods, after this, are washed well, and then put into a kettle containing clean water, and four ounces of madder to every pound. It should be kept at a scalding heat for nearly one hour, when a beautiful nankeen color will be the result. The color is made deeper in the shade by using more stuff. It is washed out of the madder and is dried. If the cotton cloth was bleached it would make a still more beautiful color.—For people living at the South, who might cultivate their own madder and cotton, this receipt will be of no little value. By putting a little of yellow oak bark among the madder, it will make the color more upon the yellow shade.

Another way to dye nankeen is to boil annatto among pearlash, (one ounce will color five pounds) and then mix it with hot water in a clean vessel, and handle the goods in it for fifteen or twenty minutes. This color is beautiful, but fugitive—it fades with the sun and can be boiled out with soap. It is of this colored stuff that so many yellow faded and spotted pantaloons are made.

Olifient Gas.

This gas burns with a bright yellow white flame: it can be made very easy for experiment, by taking one part of alcohol and two parts of sulphuric acid, putting them into a retort and heating them with a spirit lamp. After the mixture boils, the gas is evolved. One part by volume, of this gas, requires three of oxygen, for perfect combination. It may be collected over water, as the water absorbs only one-eighth of its volume. When sulphur is heated in one volume of this gas, charcoal separates, and sulphuretted hydrogen is the result in two volumes, showing that two volumes of hydrogen is condensed into one in olifient gas. Olifient gas is decomposed by heat alone, for if it be passed through a red hot tube of earthenware or metal, it deposits its carbon, and is expanded into twice its original volume of pure hydrogen.

As many know that carbon is coal, they may wonder why such a solid substance can be obtained in alcohol, which is a clear and transparent fluid, but the secret of this can be easily resolved by any one. The heaviest metals can be made as transparent as the carbon in the alcohol. By placing some clean pieces of tin in chlorine acid, the tin will disappear like alum melted in hot water. By making up a mixture of one part of nitric and one of hydrochloric acid (spirit of salt,) and throwing in thin strips of gold, it will dissolve like common salt. The gold can easily be brought back to its metallic state. These are some of the wonders of that interesting science—chemistry.

Explosions of Boilers.

When are we to have strong laws, strictly enforced, to prevent boiler explosions? Lake Erie appears to be prolific with steamboat accidents. Surely Buffalo produces a ricketty lot of steamboats and reckless officers. It is no long since a steamboat was burned on that lake and more than 200 lost their lives, now we have the blowing up of the America, killing eleven and dangerously scalding and injuring about forty more. It is a disgrace to our free country to allow such merciless slaughtering of her citizens as she does by steamboat accidents.

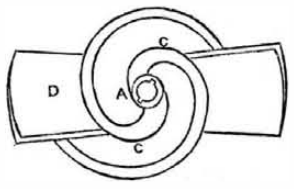
History of Propellers and Steam Navigation.

[Continued from page 376.]

BEADON'S PROPELLER.

This is rather a singular propeller in form. It is the invention of Commander Beadon, R. N., and was patented in 1846. The arms for the blades formed one of the claims. The scroll form of the arms on which to attach the blades, will be familiar to every millwright who is acquainted with Whitelaw and Stirratts' water wheel. The scroll arms have been claimed as being superior to the radial arms, and also attaching the blades directly to the shaft, owing to the extremities of screw propellers being the most effective portions of them. This is a fact, as it has been found expedient to reduce the blades of propellers (as much as is possible, consistent with strength) near to the shaft. Curved blades have also been preferred to the flat, so as to act only tangentially against the water. The rotate curve is given to the arm, increasing gradually from the centre, as in

FIG. 77.



A is the shaft; C C are the curved arms; D D the propelling blades. Two curved arms may be used to support the blade

The form of a blade essentially different from Ericson and others, has also been proposed by the same inventor, and this is represented in

FIG. 78.

and is held to be a double propeller. The blades are secured to a long boss at each end, and the form of them, instead of being the mere segment of a screw, is that of a spheroid.

There are as many different opinions about propellers as there are about water wheels, and we have shown what a beautiful variety there is—the only way to do good.

In connection with the above English propeller, we perceive by a Sheffield paper that a somewhat unique propeller has been invented there by a Mr. McIntosh. It is called "McIntosh's Improved Flexible Propeller. "It is made of steel, well hammered and tempered, and set on an angle on the revolving shaft. When at rest, it is a perfect plane, but when in action it forms a screw, and by the flexibility of the steel, assumes a finer or coarser pitch according to the strength of the adverse action of the water through which it moves. This circumstance imparts to the vessel and machinery an easy action, especially in a rough and heavy sea, which has never been attained by the rigid screws now in use. Propellers manufactured according to this patent are not more than half the weight of those made of cast metal, though the forgings are the largest yet attempted to be made from steel. It has been ascertained by experiment, that in point of speed there is at least 20 per cent. gained. In a heavy sea or rough weather this propeller can be easily hoisted on board by means of a simple block and tackle, thus saving the expense of the machinery now used for raising the cast metal ones; and, from being malleable and tough, does away with the risk of breakage which necessarilly ensues in the moving of a cumbersome peice of cast-metal. In cost there is a saving of about 50 per cent. This is considered one of the greatest improvements yet made in marine propulsion. Four of these propellers have already been made and brought into use, and as a proof of the high estimation in which they are held, it may be stated that (the Lords of the Admiralty have ordered) her Majesty's steam-vessel Bee, the swiftest screw-vessel afloat, is to be fitted out with one of these propellers in preference to the rigid screw.

New Apparatus for Drying Baggasse.

Mr. Sylvanus Richardson, of Vermont, who has for some time resided in Texas, has invented an apparatus for drying baggasse or refuse sugar cane, to make good fuel of it, which appears to be a valuable improvement. There is a number of slatted floors, one above the other, on which the baggasse is laid, allowing the air free circulation all around, and these floors are all set in motion by a shaft, whereby there is a strong current of air set in motion, which continually acts upon the baggasse, to dry it, without any artificial heat; and in conjunction with this motion, there is a current of hot air from the boilers, which assists to dry the cane faster. The baggasse is carried by an endless belt up to the first floor, and the cane, by angle floats is carried and thrown down a centre opening to the next floor and spread by the floats, and thus from floor to floor the baggasse goes through certain stages of drying until it is delivered below, perfectly dry—making good fuel. To those who are unacquainted with the rapidity with which moisture can be thrown off goods, &c., by a rapid centrifugal motion, we would say, that if they try the experiment they will be not a little astonished at its success. Measures have been taken to secure a patent.

Falling Walls.

The walls of a building in Spruce street fell on Monday, last week, and four men were killed. This wall was six stories high, and appeared to be only twelve inches thick. Is there an Inspector of Buildings in this city? If there is not, it is high time we had one, for houses are erected with such thin walls, that the probability of their falling is not conjectural, if a fire was to take place either inside or alongside of them. Within three months fifteen men (we believe that is the right number) have been *legally* murdered by the falling of walls in our city. We have often called attention to this subject, but it seems we must have a Mayor or Alderman, or some big man killed, before effective measures be taken to prevent such evils.

Petition of Inventors.

A petition addressed to the President and Congress of the United States, by a body of mechanics and men of science in St. Louis, is circulating in that city for signatures. It expresses dissatisfaction with many of the regulations and courses of procedure adopted in the patent office, a want of confidence in the decisions and capacity of a majority of those employed in the Department, and asks that gentlemen may be appointed to the stations of commissioner, examiners, and assistants—known to be thoroughly skilled in practical mechanics, as well as posessed of the necessary scientific literary attainments.

The English Locomotives At Work.

The total distance run, by all the locomotives working on the traffic railways of the United Kingdom, says Dr. Lardner, for the twelve months ending June 30, 1849, was 32,388,589 miles.

This gives a total daily mileage 88,736 miles.

The distance from the earth to the sun is ninety-six millions of miles. The locomotives of the British railways would at their present rate of work pass over that space it in three years.

The circumference of the globe is twenty-five thousand miles. The same engines with their present work would go seven times round it in two days; and in doing so each engine would work only 3½ hours.

Cannon Balls and Locomotives.

According to the experiments of Dr. Hutton, it appeared that the time of flight of a cannon ball having a range of 6,700 feet is one-quarter of a minute. The velocity was, therefore, 26,800 feet per minute, which is equal to five miles per minute or 300 miles per hour.—It follows, therefore, that a railway train, moving at 75 miles an hour, not an uncommon speed for express trains to attain, would have a velocity only four times less than a cannon ball. The momentum of such a mass moving at such speed is difficult to conceive. It would amount to a force of a number of cannon balls, equal to one-fourth of its own weight.

The late news from California represent the gold as abundant as ever.

NEW PROSPECTUS (OF THE) SCIENTIFIC AMERICAN.

TO MECHANICS, INVENTORS, AND MANUFACTURERS.

The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the SIXTH VOLUME of this valuable journal will be commenced on the 21st of September next, offering a favorable opportunity for all to subscribe who take an interest in the progress and developement of the Mechanics' Arts and Manufactures of our country. The character of the SCIENTIFIC AMERICAN is too well known throughout the country to require a detailed account of the various subjects discussed through its columns.

The aim of the publishers has always been to render it the most thorough and useful Scientific Journal in the country, and to judge of this by comparing its circulation and influence with other publications of the same class, they have the unequivocal evidence of its value, as the leading exponent of the Arts and Sciences.

While advocating the great interests upon which the prosperity of our people so much depends, it does not fail to expose the numerous evils into which inventors, as well as the public, are often led, by false representations concerning the value and practicability of new discoveries. Each volume contains an amount of practical information unprecedented by any other similar publication, and every subject is expressed with such precision, that no one, however illiterate, can fail to understand its import. Hitherto publications of a scientific character have been rendered unintelligible to the mass of the people by the use of abstruse terms. This objectionable feature is studiously avoided in the description of all the new discoveries which appear in the columns of this journal.

It will be published weekly, as heretofore, in *Quarto Form*, on fine paper, affording, at the end of the year, an *ILLUSTRATED ENCYLOPEDIA*, of over FOUR HUNDRED PAGES, with an Index, and from FIVE HUNDRED to SIX HUNDRED *ORIGINAL ENGRAVINGS*, described by letters of reference; besides a vast amount of practical information concerning the progress of SCIENTIFIC and MECHANICAL IMPROVEMENTS, CHEMISTRY, CIVIL ENGINEERING, MANUFACTURING in its various branches, ARCHITECTURE, MASONRY' BOTANY,—in short, it embraces the entire range of the Arts and Sciences.

It also possesses an original feature not found in any other weekly journal in the country, viz., an *Official List of PATENT CLAIMS*, prepared expressly for its columns at the Patent Office,—thus constituting it the "*AMERICAN REPERTORY OF INVENTIONS.*"

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Southern and Western Money taken at par for subscriptions; or Post Office Stamps taken at their full value.

PREMIUM.

Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—now in press, to be ready about the 1st of October. It will be one of the most complete works upon the subject ever issued, and will contain about ninety engravings

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